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Turridae (Mollusca: Gastropoda) of southern Africa and Mozambique. Part 6. Subfamily Mangeliinae, section 1.

by

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ABSTRACT

The southern African and Mozambican representatives of *Eucithara* Fischer, 1883, and *Leiocithara* Hedley, 1922, plus three new genera, are revised; 21 species (11 new) are present. Notes on 47 extralimital species are appended, with photographs of types.

New genera: *Gingicithara* (type species *Mangelia lyrica* Reeve, 1846) *Papillocithara* (type species *P. hebes* sp. n.), *Citharomangelia* (type species *Mangilia africana* Sowerby, 1903).

New species: *Eucithara macteola*, *E. ubuhle*, *E. abakcheutos*, *E. marerosa*, *Gingicithara maraisi*, *Papillocithara hebes*, *P. semiplicata*, *Leiocithara costellarioides*, *L. perlucidula*, *L. zamula*, *L. porcellanea*.

New synonymies: *Mangelia crassilabrum* Reeve, 1846 (*non Pleurotoma crassilabrum* Reeve, 1843), *Mangilia reevei* Tryon, 1884, *Mangelia anna* Jousseaume, 1883 = *Eucithara novaehollandiae* (Reeve, 1846); *Mangelia zonata* Reeve, 1846, *M. capillacea* Reeve, 1846, *Mangelia cithara* Gould, 1849, *Cythara waterhousei* E. A. Smith, 1884, *Mangilia psalterium* Melvill & Standen, 1896, *Cithara semizonata* Hervier, 1897, *C. eupoecila* Hervier, 1897, *Mangilia chionea* Melvill & Standen, 1899, and *Cythara optabilis* Sowerby, 1907 = *Eucithara coronata* (Hinds, 1843); *Mangilia quadrasi* Boettger, 1895, *Mangilia euselma* Melvill & Standen, 1896, *Mangilia eudeli* Sowerby, 1901, *Mangilia brunneolineata* Preston, 1905 = *Gingicithara notabilis* (E. A. Smith, 1888); *Mangilia cinnamomea peraffinis* Pilsbry, 1904 = *Citharomangelia richardi* (Crosse, 1869); *Mangelia reticulata* Reeve, 1846 (*non* Risso, 1826) and *Mangelia vittata* Reeve, 1846 (*non* Hinds, 1844) = *Eucithara obesa* (Reeve, 1846); *Mangelia abyssicola* Reeve, 1846, and *Pleurotoma (Glyphostoma?) rubrocincta* E. A. Smith, 1882 = *Eucithara vittata* (Hinds, 1843).

New records for southern Africa and Mozambique: *Eucithara novaehollandiae* (Reeve, 1846), *E. duplaris* (Melvill, 1923), *E. striatella* (E. A. Smith, 1884), *E. coronata* (Hinds, 1844), *Gingicithara lyrica* (Reeve, 1846), *G. notabilis* (E. A. Smith, 1888), *Citharomangelia richardi* (Crosse, 1869), *Leiocithara musae* (Thiele, 1925).

Lectotypes designated and figured: *Mangelia abyssicola* Reeve, 1846; *Mangelia angulata* Reeve, 1846; *Mangelia anna* Jousseaume, 1883; *Mangelia antillarum* Reeve, 1846; *Mangelia bicolor* Reeve, 1846; *Mangilia (Cythara) brunneolineata* Preston, 1905; *Mangelia capillacea* Reeve, 1846; *Mangelia celebensis* Hinds, 1843; *Mangelia cinnamomea* Hinds, 1843; *Mangelia crassilabrum* Reeve, 1846; *Mangelia cylindrica* Reeve, 1846; *Mangelia elegans* Reeve, 1846; *Mangilia eudeli* Sowerby, 1901; *Mangilia (Cythara) euselma* Melvill & Standen, 1896; *Mangelia gibbosa* Reeve, 1846; *Mangelia gracilis* Reeve, 1846; *Pleurotoma (Mangilia) grata* E. A. Smith, 1884; *Cythara guentheri* Sowerby, 1893; *Cythara hypercalles* Melvill, 1898; *Pleurotoma (Mangilia) lischkei* E. A. Smith, 1888; *Mangelia lyrica* Reeve, 1846; *Mangelia macrocephala* Thiele, 1925; *Cithara matakuana* E. A. Smith, 1884; *Mangelia musae* Thiele, 1925; *Pleurotoma (Mangilia) notabilis* E. A. Smith, 1888; *Mangelia novaehollandiae* Reeve, 1846; *Mangelia obesa* Reeve, 1846; *Mangilia cinnamomea peraffinis* Pilsbry, 1904; *Mangilia planilabroides* Tryon, 1881 (= *Mangelia planilabrum* Reeve, 1846, *non* 1843); *Mangilia psalterium* Melvill & Standen, 1896; *Mangilia quadrasi* Boettger, 1895; *Mangelia reticulata* Reeve, 1846 (*non* Risso, 1826); *Cithara striatella* E. A. Smith, 1884; *Mangilia townsendi* Sowerby, 1895; *Mangilia translucens* Barnard, 1958; *Cithara typica* E. A. Smith, 1884; *Mangelia zonata* Reeve, 1846.

Holotype figured: *Mangilia bisacchii* Hornung & Mermod, 1928; *Pleurotoma (Glyphostoma?) bathyraphe* E. A. Smith, 1882; *Mangilia (Glyphostoma) cazioti* Preston, 1905; *Mangilia chionea* Melvill & Standen, 1899; *Mangelia cithara* Gould, 1849; *Mangelia coronata* Hinds, 1843; *Cithara delacouriana*

Crosse, 1869; *Pleurotoma (Mangelia) denticulata* E. A. Smith, 1884; *Cythara duplaris* Melvill, 1923; *Pleurotoma (Glyphostoma?) exquisita* E. A. Smith, 1882; *Mangilia galigensis* Melvill, 1899; *Glyphostoma gruveli* Dautzenberg, 1932; *Mangelia hornbeckii* Reeve, 1846; *Mangelia infulata* Hedley, 1909; *Cythara interstriata* E. A. Smith, 1876; *Drillia longispira* E. A. Smith, 1879; *Pleurotoma (Mangilia) opalina* E. A. Smith, 1882; *Cythara optabilis* Sowerby, 1907; *Mangelia pellucida* Reeve, 1846; *Mangelia pessulata* Reeve, 1846; *Mangelia pallida* Reeve, 1846; *Mangelia ponderosa* Reeve, 1846; *Cythara quadrilineata* Sowerby, 1913; *Cithara richardi* (Crosse, 1869); *Cythara ringens* Sowerby, 1893; *Pleurotoma (Glyphostoma?) rubrocincta* E. A. Smith, 1882; *Cithara seychellarum* E. A. Smith, 1884; *Cythara striatissima* Sowerby, 1907; *Mangelia tenebrosa* Reeve, 1846; *Mangelia turricula* Reeve, 1846; *Cythara typhonata* Melvill & Standen, 1901; *Cythara unilineata* E. A. Smith, 1876; *Cythara vitiensis* E. A. Smith, 1884; *Mangelia vittata* Hinds, 1843; *Cythara waterhousei* E. A. Smith, 1884.

Syntypes (and possible syntypes) figured: *Cythara angiostoma* Pease, 1868; *Mangilia apollinea* Melvill, 1904; *Pleurotoma (Mangelia) boakei* G. & H. Nevill, 1869; *Cithara capillata* Hervier, 1897; *Cithara elevata* E. A. Smith, 1884; *Cithara eupoecila* Hervier, 1897; *Cythara gradata* G. & H. Nevill, 1875; *Cithara raffini* Hervier, 1898; *Cithara semizonata* Hervier, 1897; *Mangelia stromboides* Reeve, 1846.

Revised status: *Leiocithara* Hedley, 1922, is treated as a full genus; *Eucithara elegans* (Reeve, 1846), *E. novaehollandiae* (Reeve, 1846) and *E. interstriata* (E. A. Smith, 1876) appear to be valid species.

New combinations: *Mangelia flavescens* Angas, 1877, transferred from *Guraleus* to *Leiocithara*; *Mangelia angulata* Reeve, 1846, *Pleurotoma (Mangilia) lischkei* E. A. Smith, 1888, *Pleurotoma (Mangilia) opalina* E. A. Smith, 1882, and *Mangilia translucens* Barnard, 1958, to *Leiocithara*. *Mangelia cylindrica*, *M. pessulata* and *M. ponderosa* Reeve, 1846, *M. albivestis* Pilsbry, 1934, and *Pleurotoma (Mangilia) notabilis* E. A. Smith, 1888, are provisionally referred to genus *Gingicithara*. *Pleurotoma (Glyphostoma?) exquisita* E. A. Smith, 1882, belongs to genus *Cytharopsis* A. Adams, 1865 (?subfamily Daphnellinae). *Drillia longispira* E. A. Smith, 1879, is transferred from *Leiocithara* to the Drilliinae. Provisionally transferred to genus *Citharomangelia*: *Mangelia bicinctula* G. & H. Nevill, 1871, *Pleurotoma (Mangelia) boakei* G. & H. Nevill, 1869, *Pleurotoma (Mangelia) denticulata* E. A. Smith, 1884, *Cithara elevata* E. A. Smith, 1884, *Mangilia galigensis* Melvill, 1899, *Mangelia pellucida* Reeve, 1846, *Mangilia planilabroides* Tryon, 1881, *Cithara richardi* (Crosse, 1869), *Mangilia townsendi* Sowerby, 1895, and *Cythara quadrilineata* Sowerby, 1913.

Radula figured: *Gingicithara lyrica* (Reeve, 1846).

INTRODUCTION

In its broadest sense, the Mangeliinae is probably the largest – and certainly the most problematic – of turrid subfamilies. It is difficult not to be daunted by the extreme diversity in species and genera, which is often complicated by the scarcity of research material (partly the result of the small to minute size of most mangeliines) and by the difficulty of matching specimens with early figures and descriptions. Indeed, the positive identification of most Indo-Pacific mangeliines – and often even their allocation to modern genera – is more often than not hampered by the meagreness of the original descriptions and figures. Consequently, a considerable proportion of mangeliines have never been authoritatively reported since their original description.

Although the number of apparent Indo-Pacific elements in the southern African mangeliine fauna is not great, it has proved obligatory to consider, as far as possible, all described Indo-Pacific species. This has necessitated the examination of type material of a very large number of species, even if only to ascertain which were indeed comparable with local taxa, or otherwise relevant to the local fauna. As a service to future workers on the group, I have included in an appendix some of the photographs of types and pertinent notes that were garnered in the course of this work.

A complete revision of the southern African Mangeliinae will take a number of years to prepare, and consequently I will be presenting my results piecemeal, commencing with the *Eucithara* complex of genera. The available system of classification within the Mangeliinae has proved greatly in need of revision, which will be done on an *ad hoc* basis. My introductory discussion of the subfamily and a key to genera will thus of necessity follow my revisions, rather than open it.

McLean (1971) proposed a subfamily Clathurellinae for those mangeliines in which the radula teeth are long and slender with an evenly swollen base, and the siphonal canal deeply notched. I believe the distinction to be of doubtful value, and treat the clathurelline genera within the Mangeliinae. Cernohorsky (1972b: 128) pointed out that authorship of the Clathurellinae must be credited to H. & A. Adams, 1858.

Although initially I had intended including the genus *Cytharopsis* A. Adams, 1865, in the present paper, the two [undescribed] South African members of the genus appear to possess diagonally cancellate sculpture near the protoconch termination, and may prove to be referable to the subfamily Daphnellinae.

In previous papers in this series (Kilburn 1983 1985 1986 1988) the ISCC-NBS system of colour terminology was used, in an attempt to standardise descriptions, reduce subjectivity and avoid differences in interpretation and application of nomenclature. Unfortunately, in the case of small to minute shells (such as those of the Mangeliinae) accurate comparison of microscope images with colour charts has proved extremely difficult, nullifying any advantage in using the system for such groups. The ISCC-NBS system is not, therefore, utilised in the present part.

ABBREVIATIONS

a/l = ratio of aperture length (measured along main shell axis) to total shell length.
b/h = ratio of maximum protoconch breadth to its height.
b/l = ratio of shell breadth to total length.
AMSA = The Australian Museum, Sydney.
ANSP = The Academy of Natural Sciences, Philadelphia.
BMNH = The Natural History Museum, London.
ISNB = Institut Royal des Sciences Naturelles de Belgique, Brussels.
MCSN = Museo Civico di Storia Naturale 'Giacomo Doria'
MHNP = Muséum National d'Histoire Naturelle, Paris.
MMUE = Manchester Museum, The University, Manchester
NMSA = Natal Museum.
NMDP = Natal Museum Dredging Programme.
NMWC = National Museum of Wales, Cardiff.
PF = *s.s. Pieter Faure.*
SAMC = South African Museum, Cape Town.
SMFD = Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt-am-Main.
USNM = National Museum of Natural History, Washington D.C.
ZMHB = Zoological Museum, Humboldt University, Berlin.

TAXONOMY

Eucithara Fischer, 1883

Type species (monotypy) *Mangelia stromboides* Reeve, 1846.

Diagnosis: Shell biconic to fusiform, small to medium sized, aperture narrow, often longer than spire, siphonal canal short, shallowly notched at tip; outer lip preceded by a thick to massive varix; anal sinus moderately deep, rounded, often occupying most of shoulder slope, stromboid notch feeble to distinct; interior of outer lip plicate or denticulate, inner lip denticulate to strongly plicate; axial ribs more or less strong, crossed by fine to coarse spiral threads. Protoconch small, narrowly conical to subcylindrical, 1st whorl not naturally decollated, whorls convex, arcuate axial riblets developing on last whorl or two. Radula hypodermic, with a short shaft and powerful barb, the opposing blade terminating proximally in a second barb; no basal spur.

Notes: Powell (1966: 109) and Hedley (1922: 260) summarised the arguments against using the earlier generic name *Cythara* Schumacher, 1817. This viewpoint is accepted here in the interests of stability.

A radula tooth of a species identified as *E. stromboides* (Reeve, 1846), type species of the genus, was figured by Maes (1967: fig. 4D). Although her illustration of its shell (1967: pl. 15, fig. I) actually shows the somewhat similar *E. delacouriana* (Crosse, 1869), this style of radula is here assumed to be typical of the genus *Eucithara*. [The true identity of *Mangelia stromboides* remains to be established (see Appendix, under *Eucithara fusiformis* (Reeve, 1846), for discussion).]

Eucithara has been used as a convenient dumping ground for a large number of Indo-Pacific species, and well nigh a hundred species have at various times been here assigned. The initial concept of biconic-fusiform shells, with strong axial ribbing and well-developed apertural teeth or pleats, has been expanded into a somewhat amorphous grouping containing different species of a range of shapes, sculpturing and tooth development. No in-depth study of the complex has ever been assayed, but the radulae of the few species so far examined demonstrates undoubted polyphyly. For example, utilizing the extremely autapomorphic radula of *delacouriana* as a key character with which to define *Eucithara*, it is clear that two further generic names are required for the species around *Mangilia africana* and *M. lyrica* respectively. The above species excepted, members of this complex are known solely from shell characters, which unfortunately display no useful autapomorphies. Consequently, the classification here used largely entails the rather subjective clustering of conchologically-similar species around those generic nuclei which so far have been defined on radular grounds. An exception is *Leiocithara* Hedley, 1922, which is here recognised as a full genus on shell characters, although its radula is still unknown.

In all probability further subdivision of *Eucithara*, as utilised here, will prove necessary, but at present *species* differentiation within this large and confused group is the more pressing problem.

In counting plicae or denticles on the inner lip, only the main series is considered, additional pustules and irregularities being ignored. In most typical species of *Eucithara* the columella plicae are divided to a greater or lesser extent into an inner and an outer series; in the least developed character state the plicae are merely flattened or depressed along a longitudinal line just inside the aperture, so that they project slightly more along the outer and inner borders of the columella than along the median (e.g. *Eucithara fusiformis* (Reeve, 1846), *E. duplaris* (Melvill, 1923), *E. macteola* (sp. n.)). In the extreme state (Fig. 1), the plicae are usually divided by a smooth strip into a stronger outer series and a weaker internal series, suggestive of the fossula found in the genus *Cypraea* (e.g. *Eucithara novaehollandiae* (Reeve, 1846), *gibbosa* (Reeve, 1846), *cinnamomea* (Hinds, 1843), *ringens* (Sowerby, 1893), *typica* (Smith, 1884), *unilineata* (Smith, 1876)).

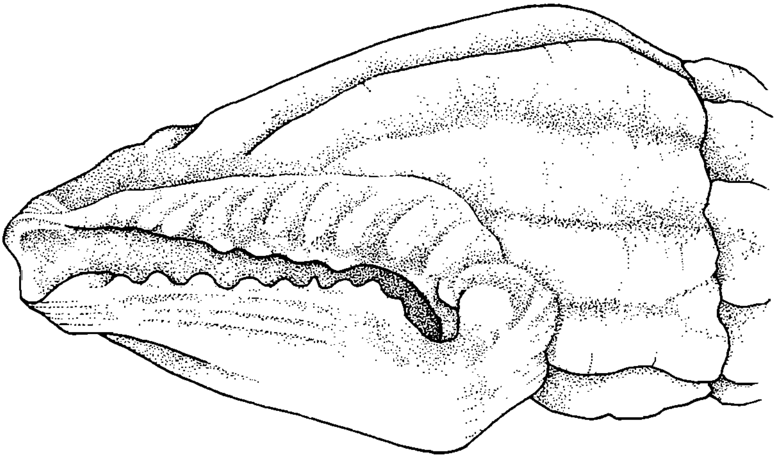


Fig. 1. Columellar plicae of *Eucithara novaehollandiae* (Reeve, 1846), showing fossula. Magnified 9 X.

The protoconch in *Eucithara* is relatively constant in form, except in the case of *E. marerosa* sp. n., in which it is blunt and paucispiral. I have hesitantly followed the current trend (see Bouchet 1990) towards viewing the development of the latter type of protoconch as phylogenetically insignificant and merely an adaptation to nonplanktotrophy. Nevertheless, this viewpoint is based mainly on theoretical considerations. In contradiction, the practical work of Hadfield & Strathmann (1990) demonstrated no correlation between developmental mode and size and shape of the protoconch in various Trochidae, which led them to dispute that benthic development could be directly inferred from the presence of an inflated, paucispiral protoconch.

Key to species of *Eucithara* in southern Africa and Mozambique

1 Axial ribs projecting above suture, which is deep and pitted; spiral sculpture of exceedingly fine threads (about 100 on penultimate whorl) .. **coronata**

– Axial ribs not projecting above suture, which is neither deep nor pitted; spiral sculpture coarser (less than 50 lirae on penultimate whorl) 2

2 Inner lip crossed by strong ridges (more or less divided into an outer series and a weaker inner one) 3

– Inner lip smooth or with small denticles or weak ridges 5

3 Spiral sculpture of very fine striae only; axial ribs tending to be slightly prosocline; shoulder slope weakly concave; ridges on inner lip inclined slightly upwards to the left .... **novaehollandiae**

– Spiral sculpture of low, close, but distinct lirae; axial ribs opisthocline or orthocline; shoulder slope markedly concave, ridges on inner lip transverse 4

4 Inner lip with 20–21 ridges, outer lip with 14–16; uniform white or with subsutural and axial blotches of orange brown .... **duplaris**

– Inner lip with about 11 ridges, outer lip with about 12; patterned with a broad median zone of brown (demarcated above by a row of darker intercostal spots) and thin pale spiral lines .... **macteola**

5 Axial ribs markedly narrower than intervals, becoming weak below suture; main interstices with a row of microscopic granules 6

– Axial ribs equal to/wider than intervals, not becoming weak below suture; interstices without granular sculpture 7

6 More elongate (b/l 0,35–0,44), whorl periphery slightly angular; flesh to pale pink, vividly patterned with orange-brown; attains 13 mm .... **ubuhle**

– Squatter (b/l 0,45–0,50), whorl periphery not angular; white, body whorl suffused with brownish; attains 8 mm .... **abakcheutos**

7 Fusiform with narrow base, a/l 0,43–0,44; axial ribs high and compressed; protoconch conical, last half-whorl ribbed; teleoconch uniform white .... **striatella**

– Oblong-fusiform, base rather broad, a/l 0,52; axial ribs not high and compressed; protoconch large, subcylindrical, smooth; teleoconch with brown markings .... **marerosa**

Eucithara novaehollandiae (Reeve, 1846)

Figs 1–10

Mangelia novaehollandiae Reeve, 1846a: pl. 4, sp. 27; *idem*, 1846b: 62. Type locality: Swan River, Western Australia.

Mangelia crassilabrum Reeve, 1846a (*non Pleurotoma crassilabrum* Reeve, 1843): pl. 5, sp. 36. Type locality: Islands of Ticao and Bohol, Philippines. **Syn. n.**

Eucithara crassilabrum; Cernohorsky, 1972a: 188, pl. 54, fig. 6.

Mangilia reevei Tryon, 1884: 265, pl. 26, fig. 68 [n. subst. pro. *crassilabrum*]. **Syn. n.**

?*Cithara (Cithara) reevei*; Boettger, 1895: 44.

Mangelia anna Jousseaume, 1883: 325. Type locality: New Caledonia. **Syn. n.**

?*Pleurotoma (Cithara) guestieri* Souverbie in Souverbie & Montrouzier, 1872: 362; *idem*, 1873: 58, pl. 4, fig. 3; *idem*, 1884: 133. Type locality: 'Ins. Art', New Caledonia.

Mangilia (Cithara) guestieri; Bouge & Dautzenberg, 1914: 162.

Eucithara gibbosa [*non* Reeve, 1846]; Hedley, 1922: 267.

Eucithara annae [*sic*]; Trew, 1991: 27.

Not: *Eucithara guestieri*; Springsteen & Leobrera, 1986: pl. 79, fig. 7 [= *Eucithara obesa* (Reeve, 1846)]

Diagnosis: Shell biconic-fusiform to biconic (b/l 0,38–0,52, a/l 0,40–0,52) with sharp apex and shallow suture, whorls strongly convex, non-shouldered, subsutural slope shallowly but distinctly concave; aperture very narrow, labial callus thick, with 7–11 strong transverse ridges, which are inclined slightly upwards towards outer edge, and on inner side of columella are divided longitudinally to form a median series of 3–4 weak nodules; parietal callus with pustules or short plicae; varix massive; outer lip with an internal thickening bearing 9–11 strong teeth. Axial ribs strong, roundedly angular in t/s, more or less as wide as intervals, reaching suture although weaker there, arcuate, mostly slightly prosocline, and numbering 9–12 on later whorls, crossed by very fine, dense, barely raised spiral threads, with an occasional slightly stronger thread. Either pale blue-grey with rib intervals, tip of rostrum, early teleoconch whorls and a median zone brownish, or brown with obscure pale spiral lines. Protoconch narrowly conical, of about 2 smooth whorls, breadth 0,40 mm. Attains 13,3 mm.

Description: Shell biconic-fusiform to biconic (b/l 0,38–0,52, a/l 0,40–0,52) with a moderately produced, somewhat broadly tapering base, and sharp apex, early part of spire somewhat coeloconoid, later part cyrtoconoid; teleoconch whorls about 6 in number; suture shallow, not channelled, more or less undulating; whorl profile strongly convex, periphery moderately angular and situated below midwhorl on early whorls, on later whorls more rounded and at or above median; shoulder slope shallowly but distinctly concave, no subsutural ridge, but sutural border slightly tumid; siphonal canal fairly short, rather straight, parallel-sided and wide, poorly differentiated from aperture, its termination squarely to slightly obliquely truncate, scarcely or not indented, left side of base shallowly concave, fasciole more or less weak. Aperture very narrow, rather straight and somewhat parallel-sided, outer lip slightly emarginate anteriorly; columella long and straight, curving strongly at junction with paries. Labial callus thick, its outer margin slightly free along length of columella, sometimes forming a feeble pseudo-umbilicus; inner lip with 7–11 strong, transverse ridges, progressively weakening towards base (where they evanesce); these ridges incline slightly upwards towards outer edge of labial callus and are interrupted longitudinally just inside aperture, cutting off a median fossula-like series of 3–4 weak nodules; parietal region usually bearing an irregular complex of 2–5 pustules or short plicae, but is sometimes swollen at parietal/labral junction into a smooth tubercle or boss. Outer lip preceded by a massive varix; edge of lip moderately sharp, but neither projecting nor incurved, bordered internally by a thickened edge bearing a series of 9–11 strong teeth, which do not extend into the interior as pleats, although anteriormost ones are somewhat pliculate; posteriormost tooth projecting strongly and defining anterior border of anal sinus, teeth becoming progressively weaker anteriorly; lip gently convex in side-view, arching back to a shallow but distinct stromboid notch; anal sinus situated on shoulder concavity, moderately shallow and very asymmetrically U-shaped.

Sculptured by strong, angular axial ribs, reaching suture but not continuous from whorl to whorl, crossed by very fine, dense, barely raised spiral threads. Axial ribs more or less equal in width to their intervals (which are evenly concave), their crests angular in t/s, their sides strongly sloping; arcuate, orientation for the most part slightly prosocline on later whorls, arcuately recurved on base of last whorl, extending from suture to suture, although weaker below suture, on body whorl continuing to base; 12–13 axial ribs on early teleoconch whorls (commencing on latter half of 1st whorl), 9–12 (usually 10) ribs on later ones. Spiral sculpture of groups of finer striae, separated by a slightly stronger one; too weak to count with certainty.

Colour variable, usually pale blue-grey, with darker to brownish rib intervals, early teleoconch whorls medium brown; tip of base and median part of body whorl often coloured brown, and entire shell may be medium brown with obscure pale spiral lines, which form whitish blotches where they cross ribs; interior of aperture and inner border of siphonal canal tinged with brown, as is occasionally parietal region and columella.

Protoconch narrowly conical (almost subcylindrical), somewhat mammilliform, of about 2 rounded whorls, 1st whorl strongly tilted; [surface worn in all specimens seen]; breadth 0,40 mm, height 0,35 mm (b/h 1,14).

Dimensions: 13,3 × 5,1 mm; 12,2 × 5,6 mm.

Distribution: Polynesia and Philippines to Mozambique.

Regional locality data: NORTHERN MOZAMBIQUE: Mozambique Island, beach drift (NMSA K6955: R. K.); N. W. Choca, Conducia Bay, in sand under rock, 9 ft above LST (NMSA H5572: K. Grosch); Conducia Bay (NMSA K1126: K. Grosch); Ibo Is., Quirimba Archipelago (NMSA J9148: R. K.).

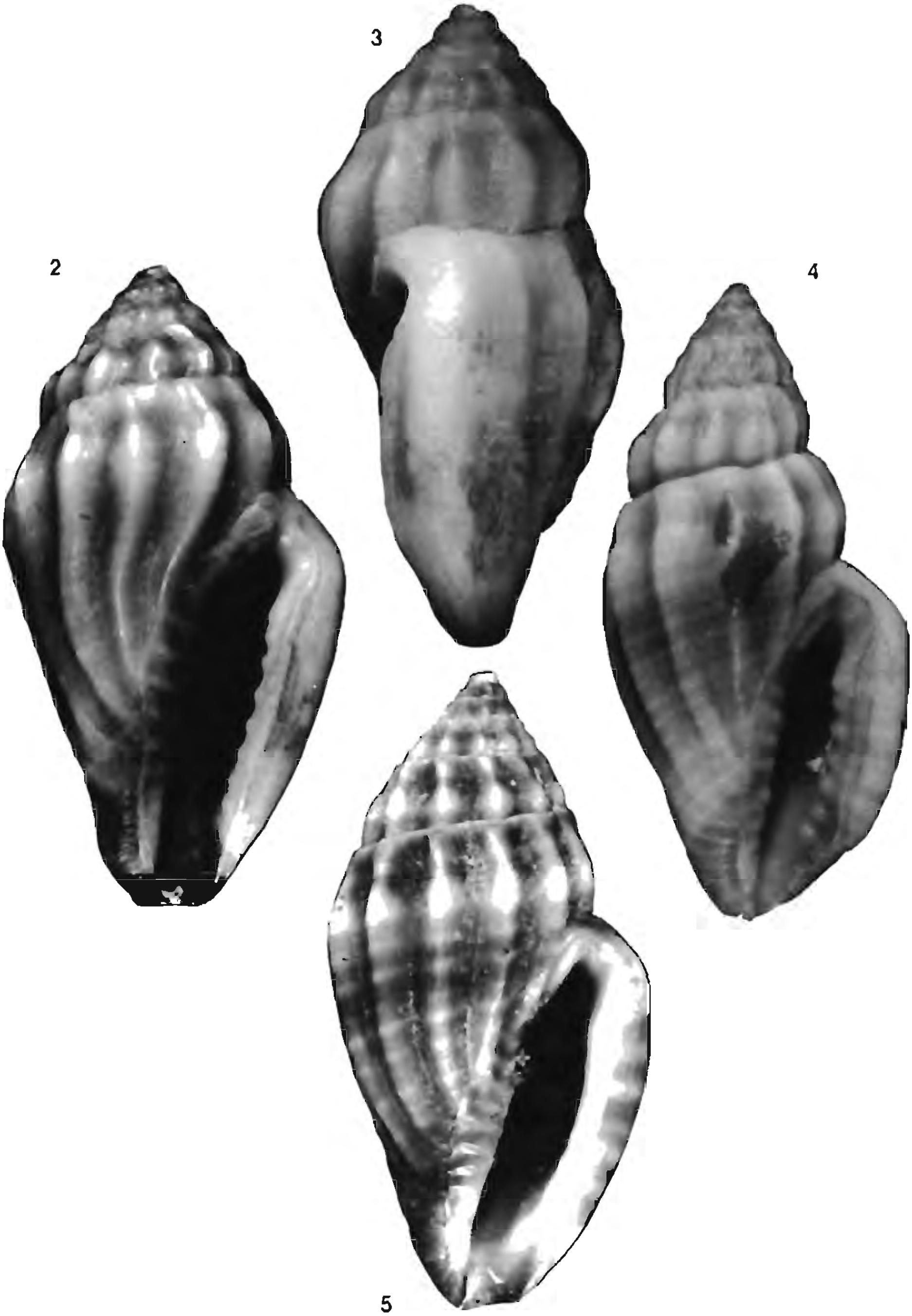
Type material: *Mangelia novaehollandiae*: three syntypes BMNH 1963444; one relatively fresh, rather ovate syntype (Figs 2–3) is marked as 'The type', and is here designated lectotype, dimensions 8,8 × 4,6 mm. The remaining syntypes are worn, more fusiform examples of the species.

Mangelia crassilabrum: Two specimens from the Cuming colln, BMNH 1963438, are labelled as syntypes, 'Is. Ticao and Bohol'. The original label is annotated '+ the type' and the corresponding specimen has been characteristically marked (presumably by E. A. Smith) with a dot of red wax; although this specimen (Fig. 4) is slightly worn and damaged, and rather narrow for the species, it appears to be the example figured by Reeve, and is accordingly designated as lectotype. The second specimen is doubtfully syntypic, because its much fresher condition indicates it to have been added subsequent to description of the species, else it would have been the one figured by Reeve. Dimensions of lectotype 8,9;an16 × 4,1 mm.

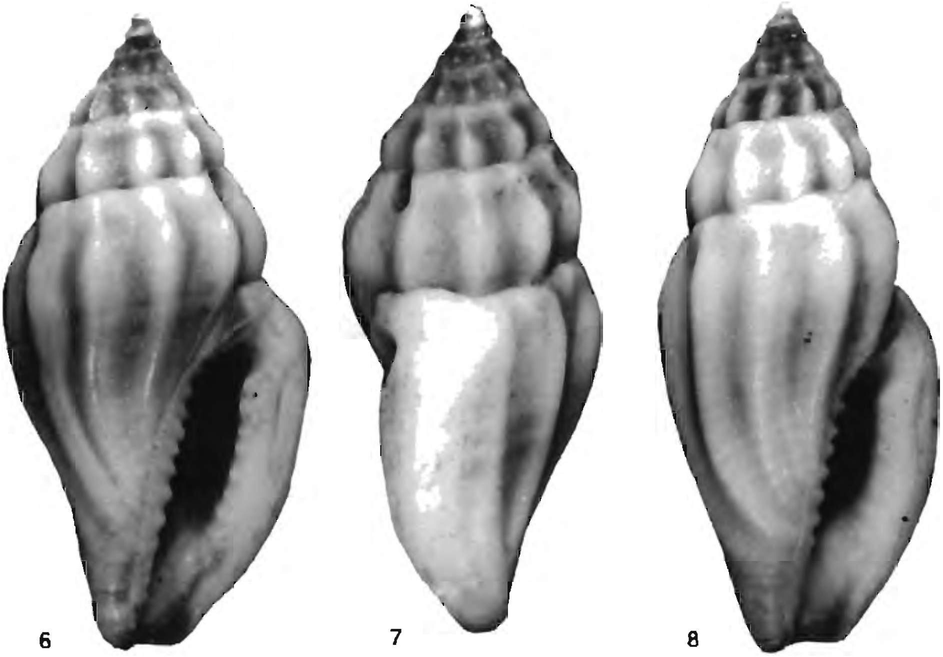
Pleurotoma guestieri: Holotype in Bordeaux Museum, according to Souverbie & Montrouzier (1873).

Mangelia anna: Four syntypes in MHNP, three NMWC 1955.158.1501 ex Marie; a lectotype, dimensions 11,7 × 6,0 mm (Fig. 5), is here designated from the MHNP series.

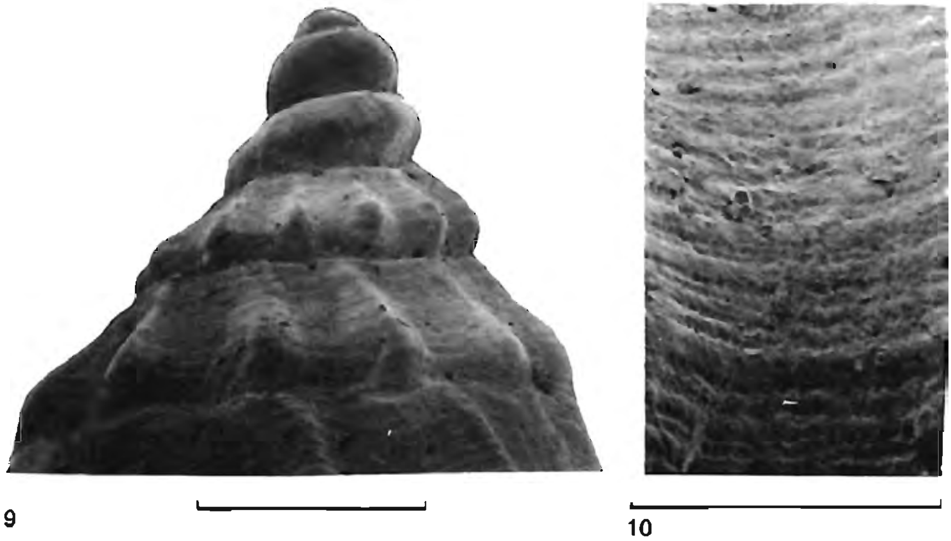
Notes: Examples from the coral coast of northern Mozambique have been compared with syntypes of *M. novaehollandiae*, *M. crassilabrum* and *M. anna*, and were found to agree well, although the species varies greatly in height of spire and in coloration. Although Tryon (1884: 266) and Hedley (1922: 267) regarded *novaehollandiae* as a synonym of *E. gibbosa* (Reeve, 1846), three



Figs 2–5. *Eucithara novaehollandiae* (Reeve, 1846): **2–3**, lectotype of *Mangelia novaehollandiae*, BMNH 1963444, 8,8 × 4,6 mm; **4**, lectotype of *Mangelia crassilabrum* Reeve, 1846, *non* Reeve, 1843, BMNH 1963438, 8,9 × 4,1 mm; **5**, lectotype of *Mangelia anna* Jousseaume, 1883, MHNP, 11,7 × 6,0 mm, photograph courtesy of P. Lozouet.



Figs 6–8. *Eucithara novaehollandiae* (Reeve, 1846): examples from Conducia Bay, Mozambique, NMSA K1126; **6–7**, 10,1 × 4,7 mm; **8**, 10,4 × 4,7 mm.



Figs 9–10. *Eucithara novaehollandiae*: SEM of protoconch and spiral sculpture, example from Conducia Bay, NMSA K1126; **9**, protoconch and first two teleoconch whorls, bar = 430 μ; **10**, spiral sculpture on penultimate whorl, bar = 200 μ.

syntypes (BMNH 1963448, Fig. 142) of that species show it to possess a stronger spiral sculpture of distinct first order lirae separated by groups of finer threads, which are cancellated by collabral threads. In *novaehollandiae* the spiral sculpture (Fig. 10) is so weak that the threads cannot be counted with certainty under the light microscope. Despite its variability, I have seen no examples of *novaehollandiae* which conform in shape with the types of *gibbosa*.

Springsteen & Leobrera (1986) utilised the name *guestieri* as a *nom. subst.* for *Mangelia reticulata* Reeve, 1846 (*non* Risso, 1826). I have not seen the holotype of *guestieri*, but Bouge & Dautzenberg (1914) equated that taxon with *Mangelia anna* Jousseaume, 1883, and like *anna* it appears to be another synonym for the present species. [The name *Mangelia obesa* Reeve, 1846, is available for the homonymous *reticulata* (see Appendix).] It should be noted that although the original description and figures of *guestieri* indicate the presence of distinct, raised spiral striae, Souverbie (1884) subsequently admitted that spiral sculpture was in fact totally absent. Indeed, when viewed with the naked eye, the pale spiral lines present in many individuals of *novaehollandiae* (notably in the brown form that predominates in New Caledonia) certainly convey the illusion of spiral ridging.

Puzzlingly, Boettger (1895) referred to a small, more sharply striate form of *reevei* under the name '*Mangilia cebuensis* Reeve', which he believed intergraded with the typical form. *Mangelia zebuensis* Reeve, 1846, belongs to the genus *Heterocithara* Hedley, 1922, and shows no resemblance to *Eucithara novaehollandiae*.

The protoconch of *E. novaehollandiae* (Fig. 9) closely resembles that of *E. delacouriana* (Crosse, 1869), but is slightly more pupiform and appears to lack brephic axials.

Eucithara duplaris (Melvill, 1923)

Figs 11–15

Cythara duplaris Melvill, 1923: 170, pl. 5, fig. 19; Trew, 1987: 36. Type locality: Andaman Islands.

Diagnosis: Shell biconic-fusiform (b/l 0,38–0,46, a/l 0,54–0,57), spire moderately low, with sharp apex and shallow suture, whorls medially more or less shouldered, subsutural slope markedly concave, aperture narrow, labial callus thick, with 20–21 moderately strong transverse ridges along entire length, ridges on inner side of columella not distinctly divided longitudinally; varix massive; outer lip anteriorly somewhat emarginate, internally with 14–16 short plicae (becoming dentiform posteriorly). Axial ribs moderately strong, roundly angular in t/s, equal to intervals, weak below suture, fairly straight, opisthocline and numbering 10–14 per whorl, crossed by close, barely raised spiral threads, alternating in three orders of strength, and microscopic collabral threads. White, with or without orange-brown blotches below suture and on dorsal side of body whorl. Protoconch narrowly conical, of about 2,5 whorls, last whorl axially ribbed, breadth 0,45–0,48 mm. Attains 16,3 mm.

Description: Shell biconic-fusiform (b/l 0,38–0,46, a/l 0,54–0,57) with a moderately produced, somewhat broadly tapering base and sharp apex, spire moderately low, more or less orthoconoid; teleoconch whorls up to about 6,6 in number; suture shallow, not distinctly channelled, not undulating; whorl profile medially weakly to moderately shouldered; shoulder slope markedly concave, no subsutural ridge but sutural border distinctly adpressed to base of previous whorl; siphonal canal moderately long, somewhat oblique, barely tapering and wide, poorly differentiated from aperture, its termination obliquely truncate, scarcely indented, left side of base not or slightly concave, fasciole weak. Aperture narrow, rather straight and parallel-sided, tapering posteriorly, outer lip somewhat emarginate anteriorly; columella long and fairly straight, curving gently at junction with paries. Labial callus thick, its outer margin slightly free anteriorly; distinctly so parietally where it forms a thickened pad; inner lip with about 20–21 moderately strong, transverse ridges, continuing along entire length of lip, except towards end of rostrum where they evanesce, not interrupted longitudinally medially; additional, finer ridges and pustules present towards outer edge of callus. Outer lip preceded by a massive varix; edge of lip moderately sharp, not incurved, bordered internally by a series of 14–16 short plicae, becoming more tooth-like posteriorly, posteriormost tooth defining anterior border of anal sinus; lip gently convex in side-view, arching back to a shallow but more or less distinct stromboid notch; anal sinus situated on shoulder concavity, moderately shallow, but somewhat spout-like and very asymmetrically U-shaped.

Sculptured by moderately strong axial ribs, becoming weak below suture on later whorls, not regularly continuous from whorl to whorl; crossed by fine, close, somewhat flat-topped spiral lirae, which in turn are crossed by microscopic collabral threads. Axial ribs more or less equal in width to their intervals (which are evenly concave), their crests roundedly angular in t/s, their sides strongly sloping; orientation opisthocline, initially arcuate, on later whorls moderately straight, recurved on base of last whorl, extending from suture to suture on early whorls, on body whorl continuing onto rostrum; 10–14 ribs per whorl. Spiral sculpture of alternately weaker and stronger threads of roughly three orders of strength, those on shoulder slope more uniform; 1st whorl with 6–7 close, subequal lirae, penultimate whorl with approximately 16–17 on shoulder slope, 15–24 anteriorly; on rostrum lirae are fine and even.

Uniform white, or white with orange-brown blotches on shoulder slope and more or less axially arranged blotches of that colour on body whorl, mainly dorsally; apex pale brown or white; aperture and inner lip white.

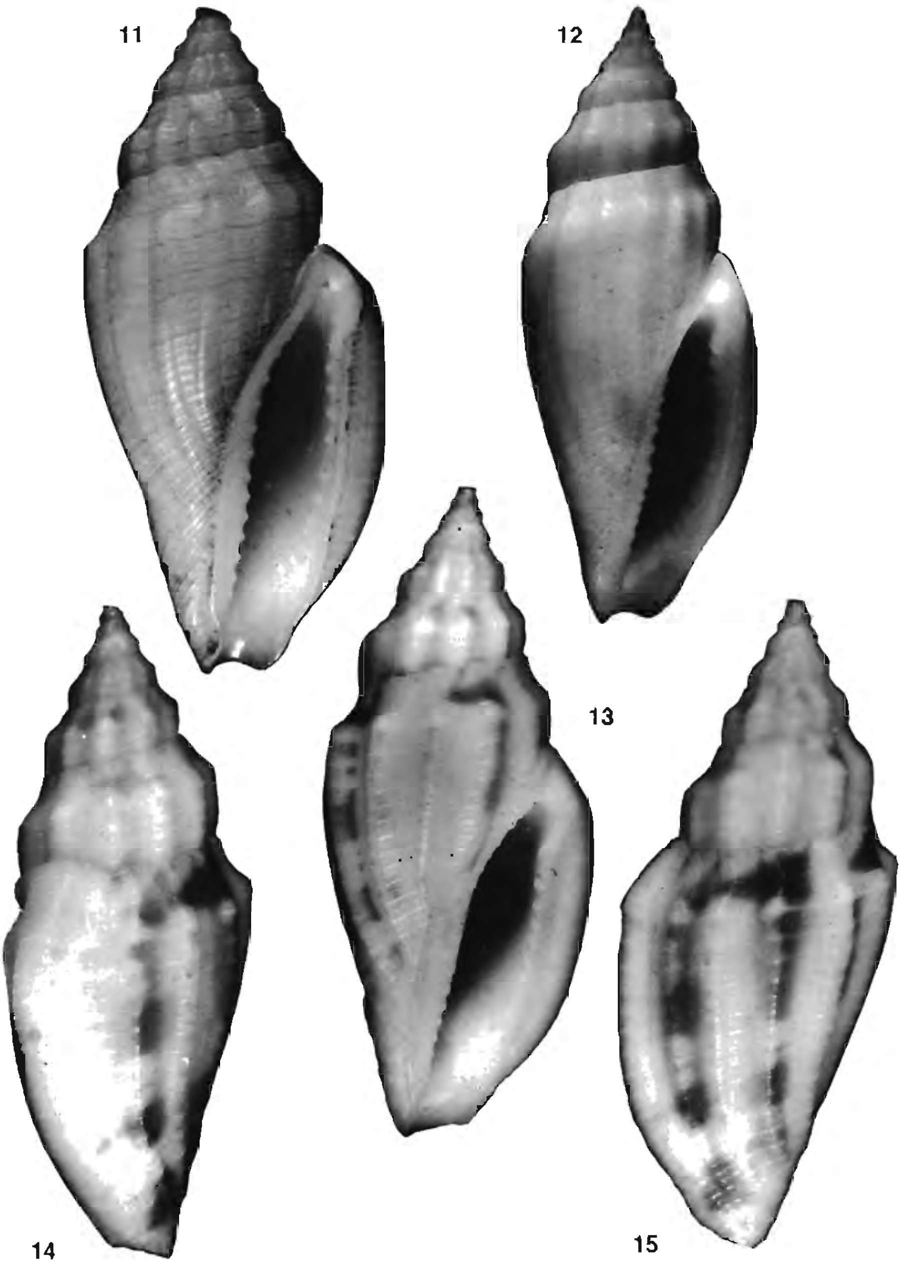
Protoconch narrowly conical, of about 2,5 rounded whorls, 1st whorl tilted; smooth except for last whorl, which bears arcuate, opisthocline axial ribs; breadth 0,45–0,48 mm, height 0,43–0,48 mm, b/h 0,94–1,12.

Dimensions: 12,7 × 5,2 mm (Mozambican example); 16,3 × 6,2 mm (Seychelles example).

Distribution: Andaman Islands and Seychelles to northern Mozambique.

Regional locality data: NORTHERN MOZAMBIQUE: Conducia Bay (NMSA H5585: K. Grosch).

Extralimital records: Cerf Is, Seychelles (NMSA K54: R. C. Wood).



Figs 11–15. *Eucithara duplaris* (Melvill, 1923): **11**, holotype of *Cythara duplaris*, BMNH 19641, 12,4 × 5,7 mm; **12**, narrow example from Cerf Island, Seychelles, NMSA K54, 15,8 × 6,2 mm; **13–15**, patterned example from Conducia Bay, Mozambique, NMSA H5585, 12,7 × 5,2 mm.

Type material: The holotype (Fig. 11) of *C. duplaris* is BMNH 19641, *ex* Sykes colln.

Notes: The present taxon belongs to one of the most problematic complexes within the genus *Eucithara*, and its validity remains questionable. Initially, I was inclined to synonymise *duplaris* with *E. fusiformis* (Reeve, 1846) (see Appendix), as sculpture and apertural characters agree. However, *fusiformis* appears to differ in its higher spire (a/l 0,48–0,51, against 0,54–0,57), more fusiform shape, non-emarginate base to the outer lip and slightly fewer apertural denticles (e.g. 17–18 on inner lip, against 20-21 in *duplaris*). Nevertheless, I have examined only a few specimens of either taxon and a final decision should await examination of a large, fresh series of specimens.

Although the holotype of *duplaris* lacks a protoconch, in teleoconch characters it agrees well with specimens from the Seychelles (a narrow example is here figured), and one from Reunion (J. Drivas colln.). Only a single specimen (Figs 13–15) has been examined from Mozambique; this is atypical in shape and in possessing brown markings, and whether it is truly conspecific with *duplaris* remains to be confirmed.

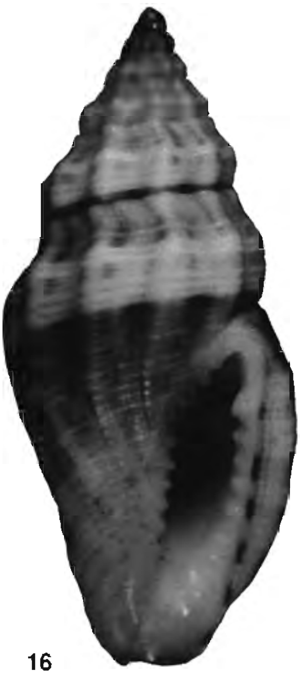
It should be noted that Melvill's figure and description of *duplaris* are very misleading, in that the axial ribs were described and drawn as being very closely positioned, which is certainly not the case in the holotype.

Eucithara macteola sp. n.

Figs 16–17

Diagnosis: Shell biconic-fusiform (b/l 0,45–0,47, a/l 0,47–0,51) with sharp apex and shallow suture, whorls strongly convex, weakly shouldered, subsutural slope markedly concave; aperture very narrow, labial callus thick, with about 11 strong transverse ridges, which on inner side of columella are divided longitudinally to form a fossula of about 5 weak nodules; lower part of parietal callus with pustules; varix massive; outer lip with about 12 strong teeth. Axial ribs strong, slightly angularly roundedly angular in t/s, more or less as wide as intervals, reaching suture although weaker there, arcuate, barely opisthocline, and numbering 9–10 on later whorls, crossed by thin, low, close-set spiral lirae, even and flattened on shoulder concavity, alternately weaker and stronger from shoulder down, totalling 33–35 on penultimate whorl. Very pale [greyish-] brown with a broad brown band on mid-body whorl, its posterior border bearing darker brown marks intercostally, and showing above suture on later whorls, also pale spiral lines, often paired, a deep orange-brown blotch above shoulder of varix and usually thin, interrupted brown lines on front edge of ribs, apex pale orange, aperture white. Protoconch conical, of about 2,3 whorls, later ones axially ribbed, 22–23 on last whorl; breadth 0,53–0,55 mm. Attains 9,4 mm.

Description: Shell biconic-fusiform (b/l 0,45–0,47, a/l 0,47–0,51) with a moderately produced, somewhat broadly tapering base, and sharp apex, early part of spire slightly coeloconoid, later part cyrtoconoid; teleoconch whorls up to about 5,2 in number; suture moderately shallow, not channelled, only slightly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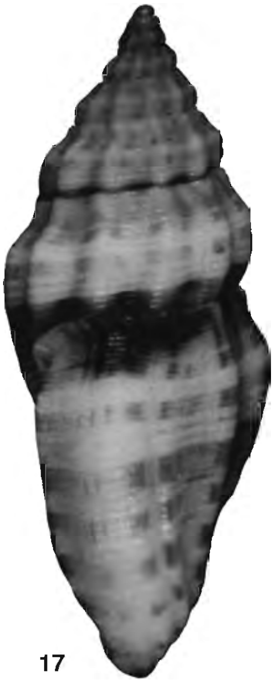
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Figs 16–17. *Eucithara macteola* sp. n., holotype NMSA S3415/T369, 9,4 × 4,2 mm.

undulating; whorl profile strongly convex, periphery more or less median, with a very slight shoulder above; shoulder slope rather deeply concave, no subsutural ridge, but sutural border somewhat adpressed against previous whorl; siphonal canal fairly short, rather straight, parallel-sided and wide, poorly differentiated from aperture, its termination rather squarely truncate, shallowly indented, left side of base not concave, fasciole weak. Aperture very narrow, rather straight and somewhat parallel-sided, outer lip distinctly emarginate anteriorly; columella long and straight, curving strongly at junction with paries. Labial callus thick, its outer margin very slightly raised anteriorly; columella with 9 strong, transverse ridges, not inclined upwards and interrupted longitudinally inside aperture, cutting off a median fossula-like series of about 5 feeble nodules; parietal region posteriorly bearing 2 plicae and anteriorly some small pustules. Outer lip preceded by a massive varix; edge of lip moderately sharp, slightly incurved, thickened internally where it bears a series of 12 strong, somewhat ridge-like teeth; posteriormost tooth projecting strongly and defining anterior border of anal sinus, teeth becoming progressively weaker anteriorly; lip medially almost straight in side-view, forming a shallow but distinct stromboid notch; anal sinus situated on shoulder concavity, moderately shallow and very openly and asymmetrically U-shaped.

Sculptured by moderately strong axial ribs, reaching suture but not continuous from whorl to whorl, crossed by thin, low, close-set spiral lirae; a microsculpture of axial threads renders the finest spirals granular, the main ones finely pliculated and the sutural border minutely prickly. Axial ribs more or less equal in width to their intervals (which are asymmetrically concave), their crests slightly angularly rounded in t/s, their sides rather gradually sloping; slightly arcuate, orientation barely opisthocline, recurved on base of last whorl, extending from suture to suture, although weaker below suture, on body whorl continuing almost to base; 11 axial ribs on first teleoconch whorl, 9–10 on penultimate whorl. Spiral lirae for the most part alternately weaker and stronger, with an occasional even finer thread, interstices very narrow, stronger lirae slightly rounded; 1st whorl with 9–11 evenly developed spiral lirae, on later whorls those on subsutural concavity are flatter and more even than those anteriorly, penultimate whorl with 14–15 below suture, plus a total of 19–20 anteriorly, base of body whorl with a total of 37–41 lirae, those on rostrum rounded and even, but evanescing towards tip.

Colour very pale [greyish-]brown, median part of body whorl with a broad band of medium brown, anteriorly ill-defined, posterior border (showing above suture on later whorls) with a row of darker brown intercostal marks; pale areas (and to a lesser extent the dark zone) further divided spirally by thin pale lines (often paired); leading face of ribs on later whorls with an interrupted axial line of yellowish-brown, and varix area bears a deep orange brown blotch subsuturally; apex pale orange; aperture region white, except for very edge of outer lip which shows a series of thin brown marks.

Protoconch conical, of about 2,3 whorls, 1st whorl slightly tilted and smooth, remaining whorls with thin, strongly arcuate, opisthocline axial ribs, 22–23 on last whorl; breadth 0,53–0,55 mm, height 0,45 mm (b/h 0,82–0,85).

Dimensions: 9,4 × 4,2 mm (holotype); 9,0 × 4,2 mm (paratype).

Distribution: Northern Zululand, 50–54 m.

Type material: Holotype NMSA S3415/T369, S. E. of Kosi Bay (26°54,0'S: 32°55,5'E), 50 m, coral slabs, NMDP. Paratype NMSA S3414/T368, off Jesser Point, 54 m, medium sand, immature; NMDP.

Notes: In its juvenile state this species somewhat resembles members of the genus *Macteola* Hedley, 1918, but adults develop a deep anal sinus and apertural teeth. From the figure and description, *E. macteola* is closely related to *E. monochoria* Hedley (1922: 269, pl. 46, fig. 63) from Queensland, but differs significantly in its fine, close, more numerous spiral lirae (*monochoria* has high, flat-topped lirae, narrower than their intervals and numbering only 8 on the penultimate whorl).

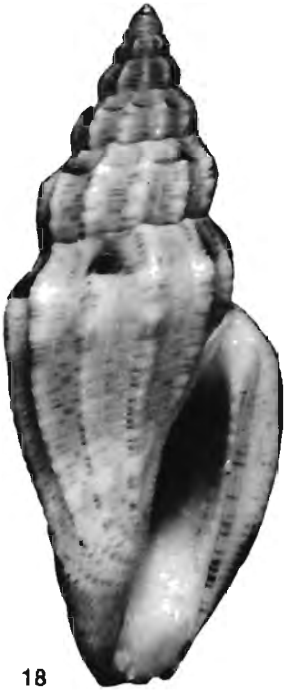
Etymology: *macteola* = a small dainty, Latin, but alluding to its resemblance to the mangeliine genus *Macteola*.

Eucithara ubuhle sp. n.

Figs 18–22

Diagnosis: Shell biconic-fusiform to fusiform (b/l 0,35–0,44, a/l 0,46-0,56) with sharp apex and fairly shallow suture, whorls roundedly angular, usually with a slight, sloping shoulder on later whorls, subsutural slope weakly to moderately concave, subsutural region neither tumid nor distinctly rising up previous whorl, suture bordered by a row of tiny prickles; aperture narrow, labial callus thin, covered with small, sharp pustules (becoming slightly plicose anteriorly); varix massive; outer lip with 15–24 low plicae. Axial ribs moderately strong, angular in t/s, much narrower than intervals, reaching suture but becoming weaker, sinuous, opisthocline and numbering 10–12 on later whorls, crossed by thin, flattened spiral threads, of varying strength, rendered somewhat pliculate by microscopic collabral threads, which form rows of microscopic granules in interstices. Flesh or pale pink, spiral lirae brownish or with brownish flecks, ribs blotched with orange-brown (conspicuously so above periphery), rostrum brown-tinged, aperture and columella white, suffused with violaceous pink. Protoconch conical, of about 3,3 whorls, from 2nd whorl axially ribbed, breadth 0,73–0,90 mm. Attains 14,7 mm.

Description: Shell fusiform to biconic-fusiform (b/l 0,35–0,44, a/l 0,46–0,56) with a strongly produced, tapering base, and fairly sharp, orthoconoid to cyrtoconoid spire; teleoconch whorls about 5,5 in number; suture fairly shallow, forming an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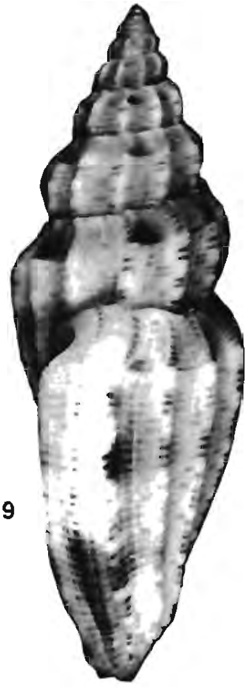
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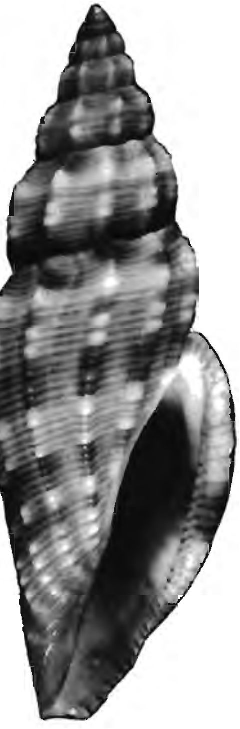
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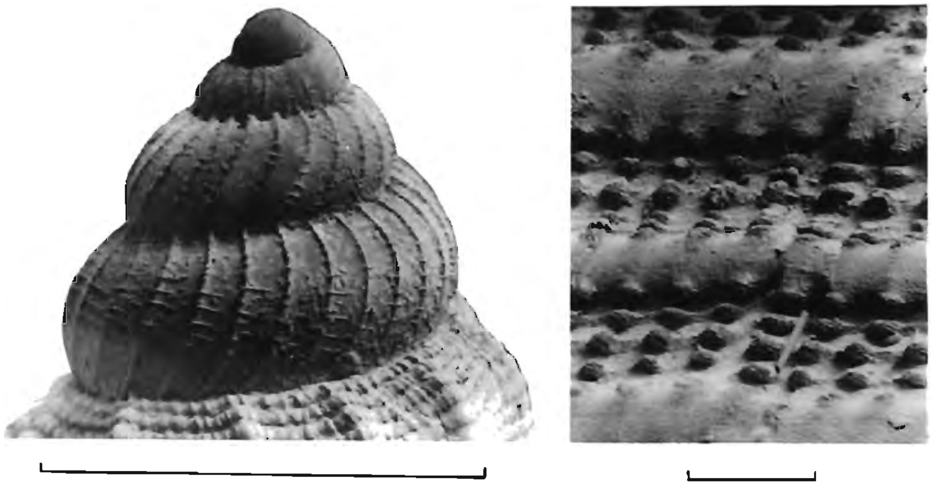
Figs 18–20. *Eucithara ubuhle* sp. n.. **18–19**, holotype, NMSA D8283/T180, 13,0 × 5,3 mm; **20**, paratype (narrow form), NMSA D8550/T176, 14,4 × 4,9 mm.

exceedingly narrow and slight channel, usually slightly undulating, whorl profile fairly strongly convex with a slightly angular periphery situated above midwhorl, usually forming a slight, sloping shoulder on later whorls; shoulder slope only slightly to distinctly concave, no subsutural ridge, but sutural border slightly tumid and adpressed against the preceding whorl; siphonal canal fairly short, rather straight, parallel-sided and wide, poorly differentiated from aperture, its termination obliquely truncate, scarcely or not indented, left side of base straight or only slightly concave, fasciole absent. Aperture narrow, rather straight and somewhat parallel-sided, outer lip somewhat emarginate anteriorly; columella long and straight (occasionally slightly sinuous), curving gently at junction with paries; labial callus thin, its outer margin not free on columella, generally (but not always) covered with sharp pustules, which become somewhat pliculate on lower columella, also microscopic longitudinal striations are sometimes visible; outer lip preceded by a massive varix; edge of lip sharp and somewhat incurved, interior with a series of 15–24 low plicae, which do not reach edge, anteriormost ones strongly oblique; lip gently convex in side-view, anal sinus subsutural, moderately shallow and very asymmetrically U-shaped, stromboid notch very shallow and wide.

Sculptured by narrow, rather compressed axial ribs, not continuous from whorl to whorl, crossed by thin, low spiral lirae, their interstices bearing several rows of microscopic granules formed where collabral threads cross spiral striae (Fig. 22); suture bordered by a line of prickly granules. Axial ribs much narrower than their intervals (which are gently concave or flattened), their crests angular in t/s, their sides steeply sloping; orientation opisthocline, sinuous, protractively curved on shoulder slope, extending from suture to suture, although weaker on shoulder slope, on body whorl continuing almost to base; 9–11 axial ribs on 1st teleoconch whorl, 10–12 on later ones. Entire surface covered by flattened spiral lirae, usually narrower than their intervals, which may bear a narrower intermediary lira, lirae finest and closest on shoulder slope; tops of lirae obsoletely pliculated, forming granules on both edges of lira; 9 spirals on 1st whorl, penultimate whorl with 20–23, base of body whorl with approximately 35–50 lirae, those on rostrum somewhat rounder than elsewhere. Interstitial microsculpture (Fig. 22) of rounded granules, regularly arranged in incremental and spiral series, in places replaced by short, spirally elongate plicules.

Ground colour flesh to pale pink, spiral lirae yellowish- to orange-brown (usually broken into flecks), axial ribs bearing alternate blotches of orange-brown and off-white to very pale brownish-cream, shoulder slope with widely-spaced blotches of orange-brown, varix crossed by conspicuous bars of the same colour, edge of lip with brown lines; base tinged with brown, protoconch pinkish-brown; aperture and columella white, suffused with violaceous-pink.

Protoconch (Fig. 21) conical, of about 3,3 whorls, whorls strongly convex, initial one small and rounded; initially smooth (slightly rugose under SEM), axially ribbed from 2nd whorl, 21–31 thin, arcuate, opisthocline riblets on last whorl; towards protoconch termination these riblets are crossed by short, obliquely spiral striae (weakest below suture); breadth 0,73–0,90 mm, height 0,65–0,85 mm (b/h 1,03–1,06).



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Figs 21–22. *Eucithara ubuhle* sp. n., SEM of protoconch and sculpture; **21**, protoconch, bar = 100 μ; **22**, spiral and interstitial sculpture, bar = 100 μ.

Dimensions: 13,0 × 5,3 mm (holotype); 14,7 × 6,0 mm, 11,4 × 4,8 mm (largest and smallest paratype respectively).

Range: Continental shelf of northern Zululand, in about 30–70 m, fine to coarse sand.

Type material (all NMSA: NMDP): Holotype D8283/T180, S. E. of Kosi Bay (26°56,9′S: 32°54,5′E), 50 m, fine, slightly muddy sand. Paratypes 1–3, E7119/T181, same data, one living. Paratypes 4–5, D8409/T177, S. E. of Kosi Bay, 50 m, fine sand, shells; 6–7, E5625/T164, do, 50 m, coarse sand, shells; 8, D7493/T165, off Boteler Point, 78 m, coarse sand, living; 9, D6402/T166, do, 70 m, coral rubble; 10, D9001/T167, off Hully Point, 30–40 m, fine muddy sand; 11, D9103/T168, off Jesser Point, 54 m, medium sand, living; 12–13, D8595/T169, do, 65–70 m, fine sand, living; 14–15, D8550/T176, do, 42 m, medium sand; 16, D6553/T170, do, 48–58 m, sand, shell rubble; 17–19, E4219/T171, off Gipsy Hill, 50 m; 20, E5658/T435, do, 52 m, fine sand; 21, E5800/T436, off Leven Point, 50–60 m, mud.

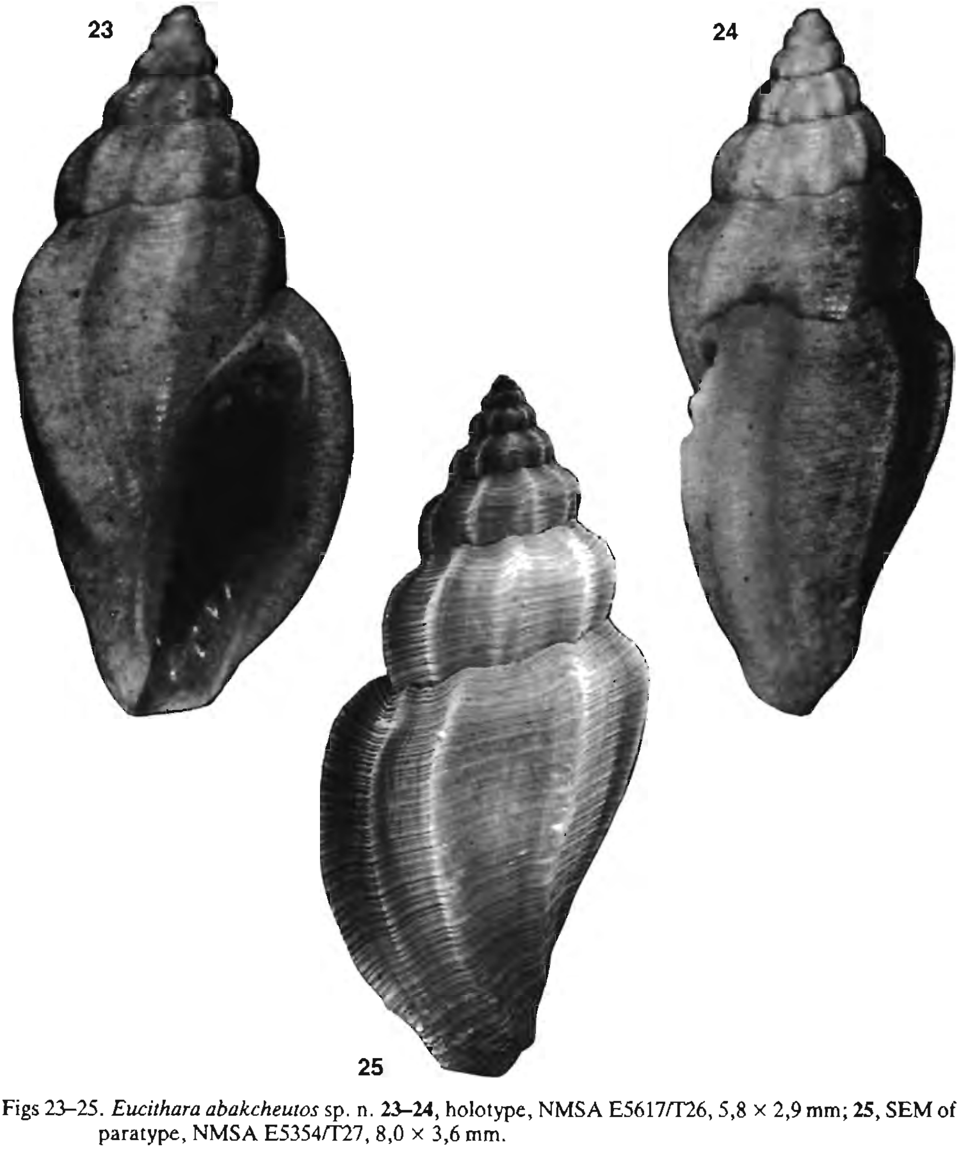
Notes: Two forms of this very attractive species occur, sometimes in the same sample, namely a slender fusiform one (b/l 0,35–0,38) and a shorter, more biconical morph (b/l 0,37–0,44). It shows slight resemblance to *Eucithara cinnamomea* (Hinds, 1843), but that differs in its closely-set spiral lirae, without interstitial sculpture, fewer axial ribs, strong plicae on the inner lip and a smaller protoconch (see Appendix). Examples of the biconical form of *ubuhle* appear somewhat similar to *E. hirasei* (Pilsbry, 1904) from Japan, but in *ubuhle* spiral lirae are much more numerous and closer-set, the inner lip bears only coarse granules, rather than distinct teeth, and the plicae within the outer lip are finer and more numerous (in *hirasei* there are 8 strong labral teeth).

Etymology: *ubuhle* = beauty (Zulu).

Eucithara abakcheutos sp. n.

Figs 23–27

Diagnosis: Shell biconic-fusiform (b/l 0,45–0,50, a/l 0,53–0,54) with sharp apex and fairly shallow suture, whorls strongly convex, not forming a distinct shoulder, subsutural slope not or only weakly concave, subsutural region neither tumid nor distinctly rising up previous whorl, suture bordered by a row of tiny prickles; aperture moderately narrow, labial callus moderately thin, bearing 11–16 small, ridge-like tubercles; varix massive; outer lip with about 12 short, low plicae,



Figs 23–25. *Eucithara abakcheutos* sp. n. **23–24**, holotype, NMSA E5617/T26, 5,8 × 2,9 mm; **25**, SEM of paratype, NMSA E5354/T27, 8,0 × 3,6 mm.

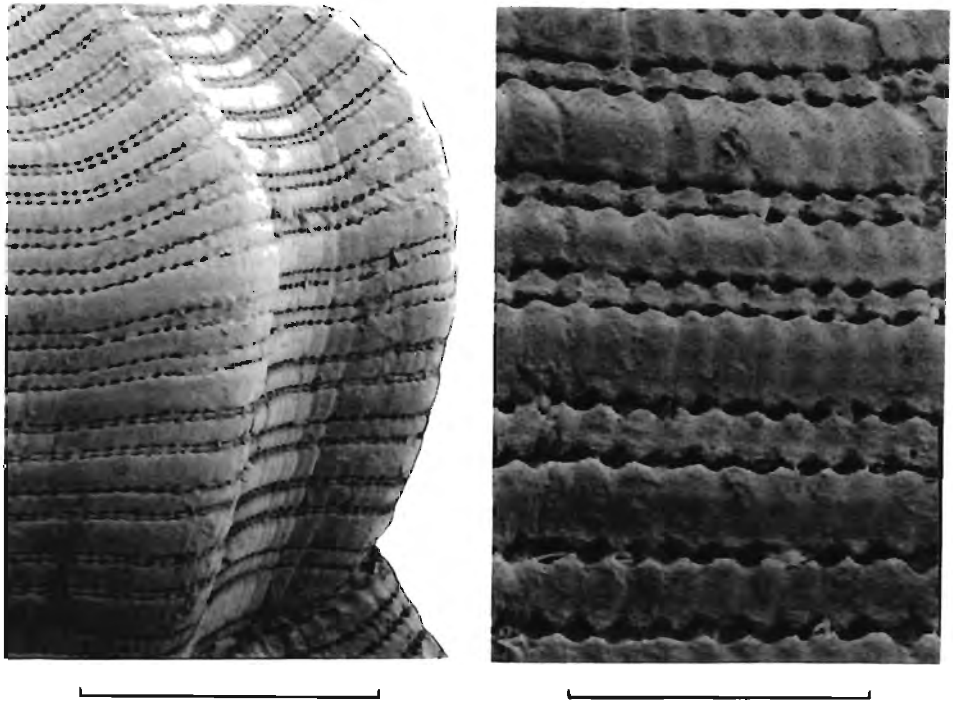
posterior ones tooth-like. Axial ribs moderately strong, compressed, roundedly angular in t/s, much narrower than intervals, reaching suture but becoming weaker there, rather straight, opisthocline, 10 per whorl, crossed by fine, close, very low spiral threads, of varying strength, rendered somewhat pliculate by microscopic collabral threads, which also render the finest interstitial threads granular and the interstices puncticulate. Glossy white, suffused dorsally with light brown. Protoconch conical, of about 2,5 whorls, from 2nd whorl axially ribbed, breadth 0,50 mm. Attains 8,0 mm.

Description: Shell biconic-fusiform (b/l 0,45–0,50, a/l 0,53–0,54) with a moderately produced, strongly tapering base, and sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls up to about 5 in number; suture fairly shallow and distinctly undulating, not channelled, whorl profile strongly convex with a rounded periphery situated at or slightly above midwhorl, not forming a shoulder on later whorls; subsutural slope not or only slightly concave, no subsutural ridge; siphonal canal fairly short, somewhat oblique, parallel-sided and moderately wide, poorly differentiated from aperture, its termination obliquely truncate, not indented, left side of base only slightly concave, fasciole feeble. Aperture moderately narrow, rather straight and somewhat parallel-sided, outer lip somewhat emarginate anteriorly; columella long and rather straight, curving gently at junction with paries; labial callus fairly thick, its outer margin barely free on columella, bearing about 11–16 fairly small denticles, transversely produced into plicae; these are weak and close anteriorly, widely spaced posteriorly; callus also with microscopic longitudinal striae visible in places; outer lip preceded by a thick, varicoid rib; edge of lip sharp and somewhat incurved, interior with a series of about 12 short, low plicae (plus an occasional granule), posterior plicae tooth-like, anteriormost ones longer and more oblique; lip gently convex in side-view, anal sinus subsutural, moderately shallow and very asymmetrically U-shaped, stromboid notch very shallow but distinct.

Sculptured by narrow, rather compressed axial ribs, not continuous from whorl to whorl, crossed by spiral lirae that are thin, low and close-set, in roughly three orders of strength; fine collabral threads render the main spirals weakly pliculate, the finest interstitial threads granular, and the interstices between spirals microfoveolate (Figs 26–27); suture bordered by a line of prickly granules. Axial ribs much narrower than their intervals (which are flattened), their crests roundedly angular in t/s, their sides steeply sloping; orientation opisthocline, weakly sinuous, extending from suture to suture, on body whorl continuing almost to base; 10 axial ribs per whorl. Entire surface covered by flattened spiral lirae, with very narrow interstices; main lirae are alternately wider and narrower, with a fine thread in their intervals; about 9 lirae on 1st whorl, penultimate whorl with about 20–27 1st and 2nd order spirals.

Glossy white, dorsally suffused with light brown, which forms a few bars behind lip varix and slightly darker blotches below suture.

Protoconch conical, of about 2,5 whorls; whorls convex, first one small and rounded; initially smooth, from 2nd whorl with thin, arcuate, opisthocline axial riblets, approximately 13 on last whorl; breadth 0,50 mm, height 0,42 mm (b/h 0,84).



26 27

Figs 26–27. *Eucithara abakcheutos* sp. n. SEM of spiral sculpture of paratype (NMSA E5354/T27): **26**, bar = 430 μ, **27**, bar = 120 μ.

Dimensions: 5,8 × 2,9 mm (holotype); 8,0 × 3,6 mm (paratype).

Distribution: Inner continental shelf of northern Zululand.

Type material: Holotype NMSA E5617/T26, S. E. of Kosi Bay (26°56,7'S: 32°54,7'E), 50 m, coarse sand, shells. Paratype NMSA E5354/T27, same area (26°55,2'S:32°55,0'E), fine sand. Both NMDP, 1987.

Notes: Of the two available specimens, the smaller is less fresh than the larger, but has better developed aperture characters and is thus selected as holotype. Of local species, *E. abakcheutos* somewhat resembles *E. striatella* (see below), but has a lower spire, lower, less compressed and slightly more numerous axial ribs, a prickly sutural margin and a dorsal brown suffusion. Of other comparable species may be mentioned *E. gruveli* (Dautzenberg, 1932) from Madagascar, *E. decussata* (Pease, 1868) from Polynesia, and *E. ella* (Thiele, 1925) from the Zanzibar channel. The holotype of *E. gruveli* (ISNB) is less biconical, with the periphery of the spire whorls almost basal, and its spiral sculpture consists of relatively coarse, well-spaced primary lirae (about 7 on penultimate whorl), with groups of 4–6 intermediary threads, whereas in *abakcheutos* the spiral lirae are fine and close, with single intermediary threads. *E. decussata* appears to have more numerous axial ribs, a more concave shoulder slope and a nodulous shoulder. In *E. ella* the axial ribs are distinctly coronate at the shoulder.

Etymology: *abakcheutos* = joyless, uninspired, Greek.

Eucithara striatella (E. A. Smith, 1884)

Figs 28–33

Cithara striatella E. A. Smith, 1884a: 327. Type locality: Persian Gulf.
Cythara striatella; Melvill, 1917: 181, pl. 10, fig. 4.

Diagnosis: Shell fusiform (b/l 0,40–0,43, a/l 0,43–0,44) with sharp apex and fairly shallow suture, whorls strongly convex, not forming a distinct shoulder, subsutural slope convex, subsutural region neither tumid nor distinctly rising up previous whorl, suture not bordered by a row of prickles; aperture narrow, labial callus moderately thick, bearing rather weak and irregular transverse plicae and pustules; varix massive; outer lip with 11–12 short, low plicae, posterior one nodule-like. Axial ribs strong, markedly compressed, rather angular in t/s, with somewhat concave sides, narrower than intervals, ribs rising high at suture but not coronated, almost straight, opisthocline, 7–9 per whorl, crossed by very fine, dense spiral threads, which are alternately weaker and stronger, and rendered slightly pliculate (granular in the case of the finer spirals) by microscopic growth plicules. Uniform white. Protoconch conical, of about 2,5 whorls, last half-whorl axially ribbed, breadth 0,45–0,50 mm. Attains 7,7 mm.

Description: Shell oblong-fusiform (b/l 0,40–0,43, a/l 0,43–0,44) with a moderately produced, broadly and rather rapidly tapering base, orthoconoid spire and sharp apex; teleoconch whorls about 5 in number; suture moderately deep, weakly and irregularly undulating, not coronate; whorl profile strongly convex, with a rounded periphery at or just above midwhorl, whorls lacking a shoulder, subsutural cord and concavity; siphonal canal short, rather straight, wide and parallel-sided, poorly differentiated from aperture, its termination obliquely truncate, not indented, left side of base shallowly concave, fasciole weak to obsolete. Aperture narrow, rather straight and somewhat parallel-sided, weakly constricted posteriorly, outer lip not emarginate anteriorly; columella long and straight, curving moderately at junction with paries; labial callus fairly thick, its outer margin slightly free on columella, bearing along its length a series of rather irregular denticles or short plicae, obsolete in region of parietal/columella junction; outer lip preceded by a thick, varicoid rib, edge of lip sharp and somewhat incurved, bordered internally by a series of 11–12 short plicae, the posteriormost one larger and nodule-like; lip gently convex in side-view, anal sinus subsutural, rather shallow and very asymmetrically U-shaped, stromboid notch obsolete.

Sculptured by strong, compressed axial ribs, not projecting above suture, nor continuous from whorl to whorl; surface covered by fine, dense, spiral threads, under SEM (Fig. 33) seen to be alternately weaker and stronger, the stronger rendered obscurely micropliculate by fine, dense collabral plicules, and the intermediary threads rendered granular. Axial ribs narrower than their intervals (which are flattened to weakly concave), their crests strongly rounded in t/s, their

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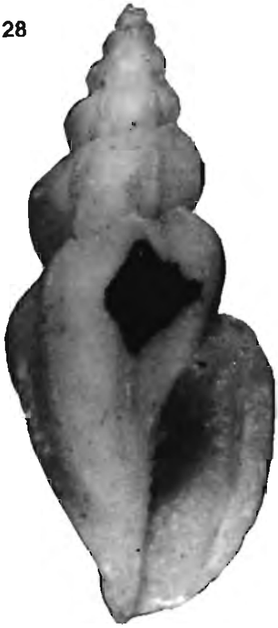

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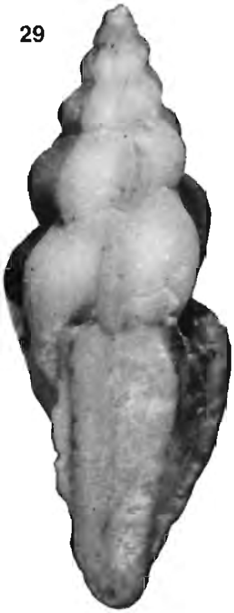

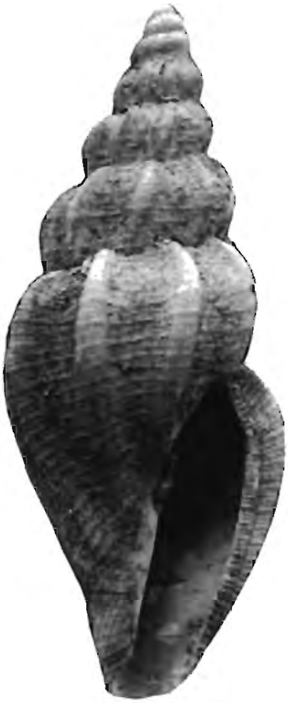

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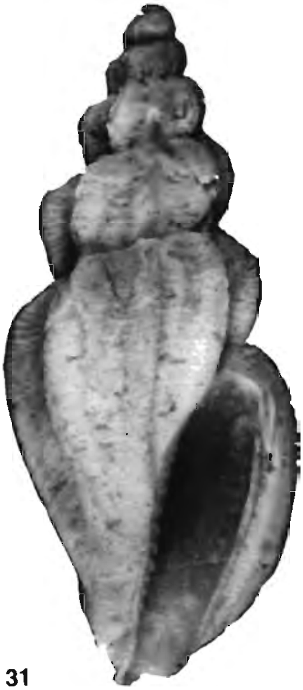

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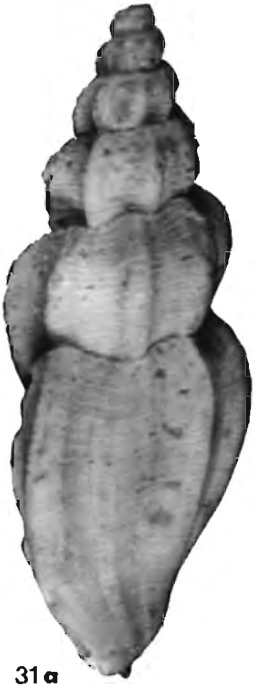
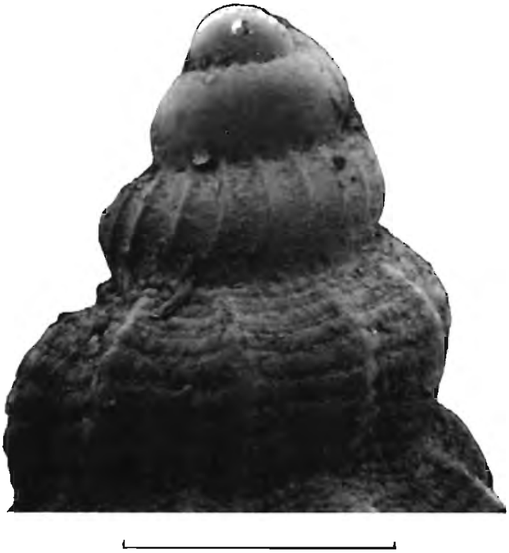
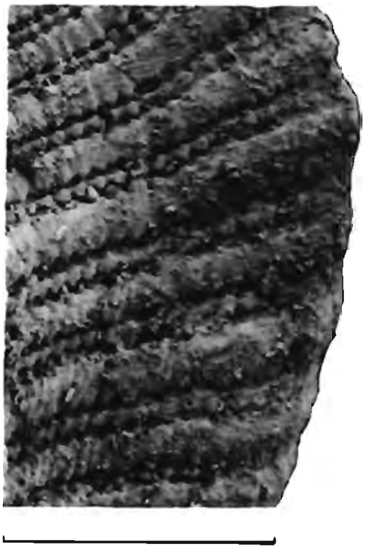


31a

Figs 28–31. *Eucithara striatella* (Smith, 1884): **28–29**, lectotype of *Cithara striatella*, BMNH 1874.1.19.41, 8,0 × 3,6 mm; **30**, NMSA G4471, Benguerua Island, Mozambique, SEM of juvenile, 5,8 × 2,4 mm; **31–31a**, adult, same data as previous, 7,1 × 3,0 mm.





Figs 32–33. *Eucithara striatella* (Smith, 1884): SEM of sculpture and protoconch: **32**, protoconch, bar = 380 μ; **33**, sculpture, bar = 176 μ.

sides very steep to concave; orientation opisthocline, weakly sinuous, barely curved below suture, on body whorl continuing almost to base; 9–12 axial ribs on 1st teleoconch whorl, 8–9 [7 in syntypes] on penultimate one. Spiral threads close and more or less evenly sized, those on rostrum no stronger than elsewhere; 1st whorl with 7–8 spiral threads, plus a few very fine ones below suture, penultimate whorl with approximately 40.

Colour uniform white throughout.

Protoconch (Fig. 32): conical, of about 2,5 convex whorls, 1st whorl tilted; initially smooth, with thin, arcuate axial riblets developing on last half-whorl; breadth 0,45–0,50 mm, height 0,38–0,45 mm (b/h 1,05–1,18).

Dimensions: 7,7 × 3,1 mm.

Range: Persian Gulf to southern Mozambique, littoral.

Regional locality data: SOUTHERN MOZAMBIQUE: N. of Benguerua Island, Bazaruto Archipelago, ca. 40 ft (at HST), amongst *Thalassodendron* (NMSA G4471, G4495: Mrs E. Roscoe).

Type material: Three syntypes from R. McAndrew collection in BMNH, No 1874.1.19.41, collected by Pelly. The largest (8,1 × 3,5 mm) bears a red dot, and in length approaches most closely the line accompanying Melvill's 1917 figure of 'The type'; it must thus be regarded as the lectotype (Figs 28–29).

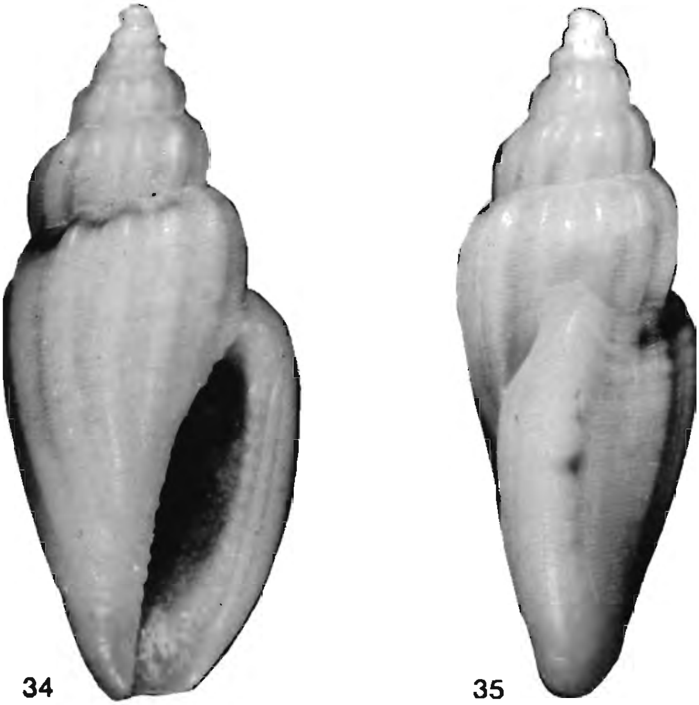
Notes: Only a small series of rather chalky specimens is available, but these agree well with the syntype set, save that the latter all have 7 axial ribs per whorl, instead of 8–9. This is presumably indicative of some degree of geographical variation.

Eucithara marerosa sp. n.

Figs 34–35

Diagnosis: Shell oblong-fusiform (b/l 0,43–0,46, a/l 0,52) with fairly blunt apex and moderately deep suture, whorls strongly and evenly convex, without trace of shoulder or subsutural concavity, sutural border neither tumid nor rising up previous whorl, suture edged with a row of microscopic prickles; aperture moderately narrow, labial callus fairly thin, bearing 12–18 small, short plicae (sometimes no more than pustules); varix large; outer lip with 12–18 short, low plicae. Axial ribs moderately strong, rounded in t/s, more or less equal to intervals, rising slightly at suture, but not forming coronations, somewhat sinuous, opisthocline, 10–12 per whorl, crossed by fine, close, very low spiral threads, of rather uniform strength, rendered very slightly pliculate by microscopic collabral threads. White with a brown subsutural band, body whorl tinged dorsally with brownish, occasionally with spiral brown bands, or orange-brown overall with pale ribs and base. Protoconch low cylindrical, of about 2 whorls, evidently smooth, breadth 0,63–0,70 mm. Attains 9,9 mm.

Description: Shell oblong-fusiform (b/l 0,43–0,46, a/l 0,52) with a produced, broadly tapering base, orthoconoid to cyrtoconoid spire and fairly blunt, slightly papilliform apex; teleoconch whorls about 4,5 in number; suture moderately deep, not forming a channel, distinctly undulating, whorl profile fairly strongly convex with no trace of a peripheral angle or shoulder, subsutural region not



Figs 34–35. *Eucithara marerosa* sp. n.: holotype, NMSA C8178/T179, 9,5 × 4,1 mm.

concave, nor is there a ridge at sutural border; siphonal canal short, rather straight, parallel-sided and wide, poorly differentiated from aperture, its termination truncate, almost straight, indented, left side of base only very slightly concave, fasciole absent. Aperture moderately narrow, rather straight and somewhat parallel-sided, tapering posteriorly, outer lip not emarginate anteriorly; columella long and straight, curving very slightly at junction with paries; labial callus fairly thin, its outer margin not free on columella, bearing 12–18 short, transverse plicae, weakest medially, sometimes little more than pustules; outer lip preceded by a thick, varicoid rib, whose posterior termination rises slightly up preceding whorl; edge of lip moderately sharp and slightly incurved, bordered internally by a series of 12–18 short plicae, the posteriormost one largest and sometimes compound; lip gently convex in side-view, anal sinus subsutural, shallow and very asymmetrically U-shaped, stromboid notch slight.

Sculptured by moderately strong axial ribs, not or only partially continuous from whorl to whorl, crossed by thin, low, fairly dense, rather even spiral lirae, rendered feebly and minutely pliculate by collabral striae; suture bordered below by a row of minute prickly granules. Axial ribs equal to/slightly wider than their intervals (which are strongly concave), their crests rounded in t/s, their sides strongly sloping; orientation opisthocline, somewhat sinuous, protractively curved on shoulder slope, rising slightly at suture, on body whorl continuing almost to base; 11–12 axial ribs on 1st teleoconch whorl, 10–12 on later ones. Entire surface covered by fine, slightly rounded spiral lirae, of irregular width, but wider than their intervals, lirae finest and most regular on shoulder slope; 10–12 spirals on 1st whorl, penultimate whorl with 34–42, base of body whorl with approximately 50–60 lirae.

Off-white, last whorl usually developing a brown band below suture, darkest on dorsum, which is usually lightly tinged with brownish, back of varix with a number of light orange-brown bars and one dark median bar; protoconch and apertural region white. Occasional specimens have inconspicuous brown spiral lines, and rarely are rich orange-brown overall, with pale ribs and a white base.

Protoconch low cylindrical, of about 2 whorls, 1st whorl depressed; evidently smooth (but all examples worn); breadth 0,63–0,70 mm, height 0,53–0,55 mm (b/h 1,19–1,27).

Dimensions: 9,5 × 4,1 mm (holotype); largest paratype (protoconch damaged) 9,8 mm.

Range: Southern Natal and eastern Transkei (Shelley Beach to Mzamba), littoral.

Type material: Holotype NMSA C8178/T179, Mzamba, Transkei (30°51′S: 29°46′E), beach-drift, R. K., D. G. Herbert. Paratypes 1–8, NMSA B4520/T172, same locality, R. K; 9–11, in J. P. Marais colln., same locality. Paratype 12, NMSA A3869/T173, Port Edward, Natal south coast, beach-drift, Mrs R. Cock. Paratypes 13–15, NMSA A1603/T174, Palm Beach, Natal south coast, beach-drift, R.K.

Additional material: Mzamba (NMSA A1566: R.K.); Ramsgate, Natal south coast (NMSA A1474: E. J. Kilburn).

Notes: This species is abundant in beach-drift at Mzamba (Fossil Head), but is invariably worn, and of several hundred examples seen, only a few retain an intact apex. The protoconch is very atypical within *Eucithara* on account of its paucispiral, subcylindrical form, suggestive of members of the genus *Papillocithara*.

Within *Eucithara* there is some similarity to *E. angiostoma* (Pease, 1868) (see Appendix), although protoconch characters in that species are unknown. Possible syntypes (BMNH 1989132) of *angiostoma* (Fig. 167) differ from *marerosa* in their cyrtoconoid spire, axial ribs which continue to the suture (sometimes rendering it weakly coronate) and spiral lirae which are stronger and less uniform.

Etymology: *mare* (the sea) + *erosus* (eroded), Latin.

Eucithara coronata (Hinds, 1843)

Figs 36–53

Mangelia coronata Hinds, 1843: 45; *idem*, 1844: 26, pl. 9, fig. 2; Reeve, 1846a: pl. 7, sp. 51. Type locality: Straits of Macassar.

Mangelia zonata Reeve, 1846a: pl. 3, sp. 15; *idem*, 1846b: 61. Type locality: Isle of Ticao, Philippines.

Cithara (Cithara) zonata; Boettger, 1895: 42.

Mangilia (Cithara) zonata [*partim*]; Bouge & Dautzenberg, 1914: 167.

Mangelia capillacea Reeve, 1846a: pl. 2, sp. 10; *idem*, 1846b: 60. Type locality: Island of Burias, Philippines (found among coarse sand at the depth of seven fathoms). **Syn. n.**

Eucithara capillacea; Hedley, 1922: 264 (references).

Mangelia cithara Gould, 1849: 140; *idem*, 1852: 250, pl. 18, figs. 313 a, b; *idem*, 1862: 63, 245; Johnson, 1964: 56. Type locality: Feejee Islands [= Fiji]. **Syn. n.**

Cythara waterhousei E. A. Smith, 1884a: 327. Type locality unknown. **Syn. n.**

Mangilia (Cythara) psalterium Melvill & Standen, 1896: 285, pl. 9, fig. 23; Trew, 1987: 59. Type locality: Loyalty Islands. **Syn. n.**

Cithara semizonata Hervier, 1897: 48, 167, pl. 7, fig 2. Type locality: Lifou, Loyalty Islands. **Syn. n.**

Cithara eupoecila Hervier, 1897: 52, 175, pl. 7, fig. 5. Type locality: Lifou, Loyalty Islands. **Syn. n.**

Mangilia (Cythara) chionea Melvill & Standen, 1899: 156, pl. 10, fig. 4; Trew, 1987: 31. Type locality: Mèr (Murray Island), Torres Straits.

Cythara optabilis Sowerby, 1907: 300, pl. 25, fig. 4. Type locality: New Caledonia. **Syn. n.**

Mangilia (Cithara) zonata var. *plurilineata* Bouge & Dautzenberg, 1914: 167. Type locality: New Caledonia and Lifou, Loyalty Islands.

?*Mangelia celebensis* Hinds, 1843: 46; idem, 1844: 26, pl. 9, fig. 5. Type locality: 'Straits of Macassar. From ten fathoms; mud.'

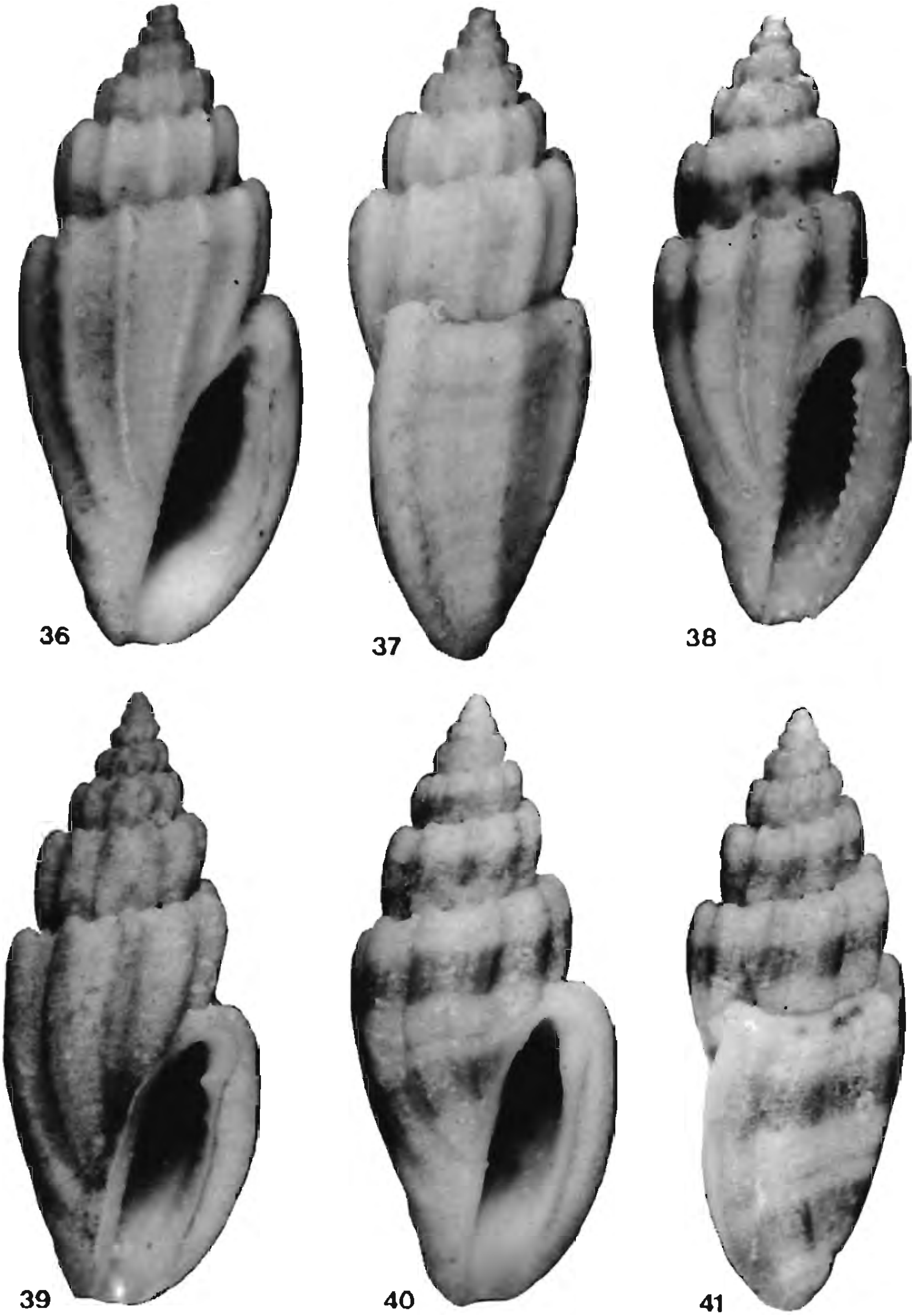
?*Mangelia pallida* Reeve, 1846a: pl. 5, sp. 34; *idem*, 1846b: 63. Type locality: Island of Ticao, Philippines.

?*Mangelia hornbeckii* Reeve, 1846a: pl. 6, sp. 47; *idem*, 1846b: 63. Type locality: Island of St Thomas, West Indies.

?*Cithara subgracilis* Hervier, 1898: 52, 177, pl. 8, fig. 1. Type locality: Lifou, Loyalty Islands.

?*Cithara subgibbosa* Hervier, 1897: 168, pl. 7, fig. 3. Type locality: Lifou, Loyalty Islands.

Diagnosis: Shell oblong fusiform (b/l 0,38–0,43, a/l 0,41–0,51) with sharp apex; whorls strongly coronated, axials projecting above suture and rendering it deep and intercostally pitted, whorl profile convex, widest posteriorly; aperture moderately narrow, labial callus fairly thick, bearing numerous rather weak and irregular transverse plicae and pustules; varix massive; outer lip with 7–13 short, weak plicae (sometimes absent), plus a posterior nodule. Axial ribs strong, somewhat compressed, angularly rounded in t/s, more or less equal to intervals, almost straight, opisthocline, 9–11 per whorl, crossed by dense, microscopic, more or less even spiral threads, rendered minutely cancellate by collabral



Figs 36–41. *Eucithara coronata* (Hinds, 1843): **36–37**, holotype of *Mangelia coronata*, BMNH 1879.2.26.91, 11,6 × 5,0 mm; **38**, lectotype of *Mangelia zonata* Reeve, 1846, BMNH 1963439, 11,0 × 4,5 mm; **39–41**, specimens from Conducia Bay, Mozambique, NMSA H4533: **39**, 7,3 × 3,2 mm, **40–41**, 7,4 × 3,3 mm.

threads of equal strength. White or buff, usually with spiral bands of orange-brown or lines of yellowish. Protoconch narrowly conical, of slightly more than 2 whorls, last whorl axially ribbed, breadth 0,45–0,50 mm. Attains 13,0 mm.

Description: Shell rather broadly oblong-fusiform (b/l 0,38–0,43, a/l 0,41–0,51) with a moderately produced, broadly and rather rapidly tapering base, orthoconoid to slightly cyrtoconoid spire and sharp apex; teleoconch whorls about 6,5 in number; suture deep, rendered crenate by prominent subsutural coronations and forming a series of pits between axials; whorl profile convex, with periphery subsutural, no shoulder, subsutural cord or concavity; siphonal canal short, rather straight, wide but somewhat tapering, poorly differentiated from aperture, its termination obliquely truncate, only very slightly indented, left side of base shallowly to barely concave, fasciole feeble to moderate. Aperture narrow, rather straight and somewhat parallel-sided, constricted posteriorly, outer lip not or only slightly emarginate anteriorly; columella long and straight, curving very slightly at junction with paries; labial callus fairly thin, its outer margin slightly free on columella, usually bearing a variable number of short, transverse plicae, sometimes reduced to little more than irregular pustules, sometimes altogether absent; outer lip preceded by a thick, varicoid rib, whose posterior termination rises slightly up preceding whorl; edge of lip moderately sharp, bordered internally by a series of 8–14 short plicae, the posteriormost one larger and nodule-like; lip gently convex in side-view, anal sinus subsutural, rather shallow and very asymmetrically U-shaped, stromboid notch obsolete.

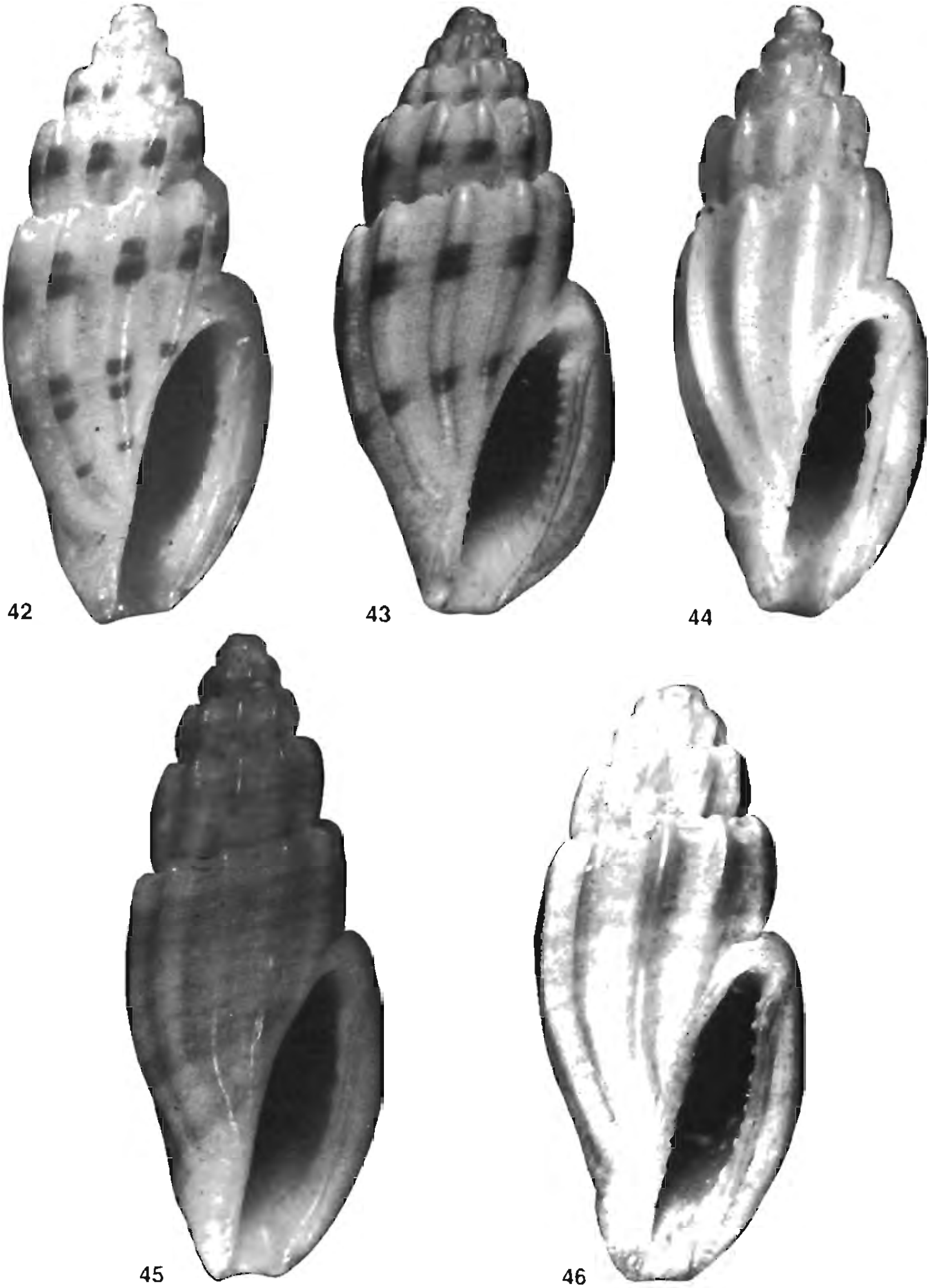
Sculptured by strong axial ribs, projecting in strongly, crenate-coronate fashion above suture, not continuous from whorl to whorl; surface covered by dense, extremely fine spiral threads, rendered obscurely microcancellate by fine, dense growth lines, and in fresh shells forming a dull intritacalx-like layer, on rostrum threads are accompanied by a few widely spaced and stronger spiral lirae. Axial ribs more or less equal to their intervals (which are concave), their crests strongly rounded to slightly angular in t/s, their sides strongly sloping; orientation somewhat opisthocline, more or less straight (becoming arcuate only on base of body whorl), on body whorl continuing almost to base; 9–11 axial ribs on all teleoconch whorls. Spiral threads either evenly sized and spaced, or with main spirals at intervals; slightly granular when unworn; penultimate whorl with approximately 100 threads.

Ground colour very pale buff to white, usually with 1–2 transverse bands of brownish-orange, the upper one at or below mid (spire) whorl level, the lower (if present) at level of bottom of paries; band sometimes divided by a median pale line, or forming a latero-dorsal blotch on body whorl; occasionally the only pattern is a series of inconspicuous flesh-coloured or yellowish spiral lines (which may also occur in the typical banded form); columella and aperture white, the dark bands (when present) showing through into interior.

Protoconch bluntly conical, of slightly over 2 whorls, 1st whorl depressed; initially smooth, fine axial riblets developing on last whorl; breadth 0,45–0,50 mm, height 0,40 mm (b/h 1,13–1,25).

Dimensions: 13,0 × 5,6 mm, 12,1 × 4,9 mm.

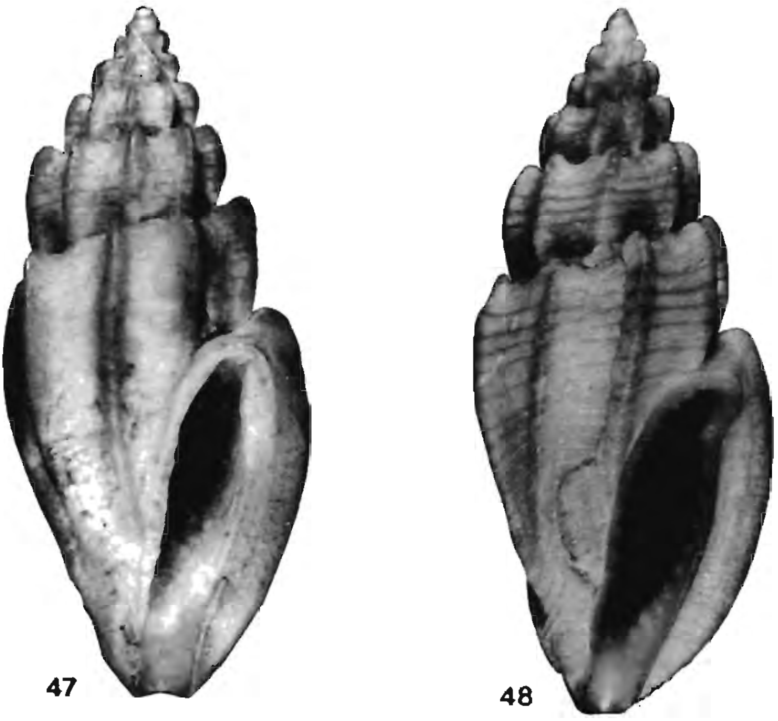
Range: Polynesia and Philippines to Mozambique, littoral.



Figs 42–46. *Eucithara coronata* (Hinds, 1843): **42**, probable syntype of *Cithara eupoecila* Hervier, 1897, MHNP, 8,4 × 3,6 mm; **43**, holotype of *Cythara optabilis* Sowerby, 1907, BMNH 1907.8.28.37, 11,5 × 5,3 mm; **44**, probable syntype of *Cithara semizonata* Hervier, 1897, MHNP, 8,2 × 3,3 mm; **45**, lectotype of *Mangilia psalterium* Melvill & Standen, 1896, MMUE EE3767, 9,6 × 3,9 mm; **46**, holotype of *Cythara waterhousei* Smith, 1884, BMNH 196442, 8,2 × 3,7 mm. Figs 42 and 44 courtesy of P. Lozouet.

Regional locality records: NORTHERN MOZAMBIQUE: Conducia Bay (NMSA H4533-4, J4125, K1125: K. Grosch); Mozambique Island, beach drift (K6954: R. K.). SOUTHERN MOZAMBIQUE: Benguerua Is, Bazaruto Archipelago, dredged in ca. 40 ft (at HST), among *Thalassodendron* (NMSA J5795: Mrs E. Roscoe).

Type material: Holotype of *M. coronata* BMNH 1879.2.26.91 (Figs 36–37), Lombe-Taylor colln, dimensions 11,6 × 5,0 mm. Of three worn syntypes of *Mangelia zonata* (BMNH 1963439), the largest (11,0 × 4,5 mm) and least damaged is designated as lectotype (Fig. 38); it should be noted that Reeve's figure of this taxon is extremely inaccurate. *C. waterhousei*: Holotype BMNH 196442 (Fig. 46), H. Cuming, slightly worn. *C. eupoecila*: one probable syntype in MHNP (Fig. 42), ex *J. Conchyliol.* colln, don. Hervier, Lifou; dimensions: 8,4 × 3,6 mm; remaining syntypes probably in Lyon. *C. semizonata:* two probable syntypes, MHNP, ex *J. Conchyliol.* colln, don. Hervier, seven in NMWC 1955.158.946, *fide* Trew (1991); exactly like *eupoecila*, but with a different colour pattern (Fig. 44). *C. optabilis*: holotype BMNH 1907.8.28.37 (Fig. 43), worn. *M. psalterium*: figured syntype MMUE 3767 (Fig. 45), a somewhat worn specimen measuring 9,6 × 3,9 mm. *M. capillacea*: two syntypes BMNH 1962463, H. Cuming colln.; only one, here designated as lectotype (Fig. 48), has 'capillary' lines, dimensions 9,9 × 4,0 mm. *M.*



Figs 47–48. *Eucithara coronata* (Hinds, 1843): **47**, holotype of *Mangelia cithara* Gould, 1849, USNM 5710, 9,1 × 4,1 mm; **48**, lectotype of *Mangelia capillacea* Reeve, 1846, BMNH 1962463, 9,9 ×. 2,0 mm.

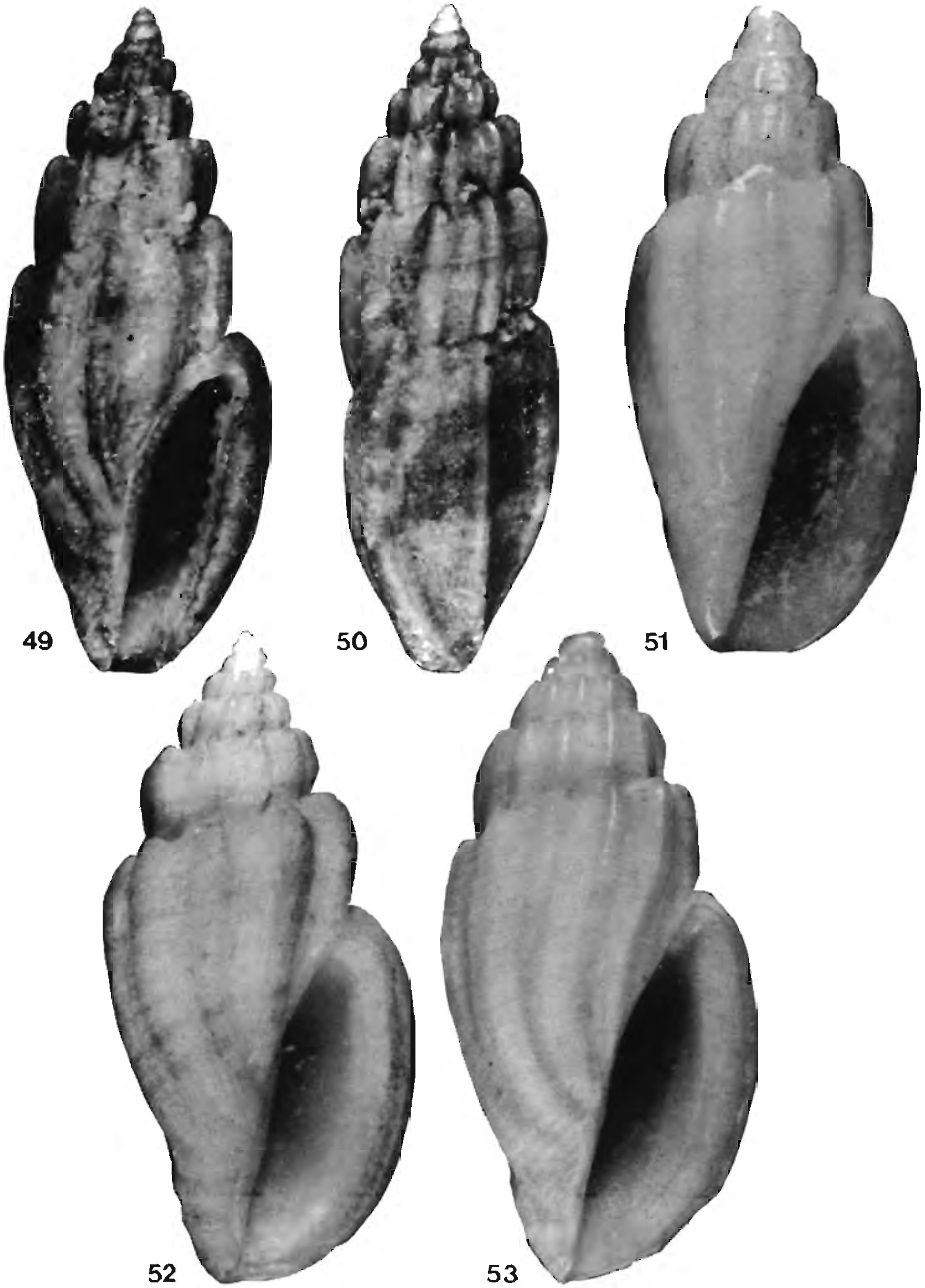
cithara: holotype (Fig. 47) USNM 5710, dimensions 9,1 × 4,1 mm. *M. hornbeckii*: Two syntypes 1963469, Cuming collection, *ex* Hornbeck; one separated as 'the type', dimensions 9,0 × 4,2 mm, here designated as lectotype (Fig. 52). Two syntypes of *M. celebensis* are BMNH 1879.2.26.94 (Fig. 49–50); one with an intact protoconch, shell dimensions 7,7 × 3,2 mm, is designated lectotype. *M. chionea*: holotype BMNH 1899.2.23.17 (Fig. 51), a very worn shell with immature lip. *M. pallida*: holotype BMNH 1963459 (Fig. 53), a worn, rather broad shell.

Notes: The present species is an abundant one in the tropical Indo-West Pacific, and being somewhat variable has been repeatedly redescribed under a number of names. Although I have summarised my conclusions in the above synonymy, the full limits of variation in the species still remain to be established through direct study of populations.

Initially I believed that the nature of the spiral sculpture could be used to differentiate two taxa. This is typically uniformly fine (*coronata*, *zonata*, *waterhousei*, *eupoecila*, *semizonata*, *psalterium*), but in other individuals (*capillacea*, *pallida*, *celebensis*, *cithara*) stronger spiral threads occur at regular intervals, with fine ones in between. However, I have observed both types of sculpture in the same sample. Colour is a particularly variable parameter (as was recognised by Bouge & Dautzenberg 1914). Thus, individuals may be uniform white (*coronata*, *chionea*, *pallida*, *cithara*), or patterned with transverse brown bands (*zonata*, *optabilis*, *psalterium*), interrupted paired bars (*eupoecila*) or fine brown/orange spiral lines (*capillacea*, *waterhousei*, *plurilineata*). Degree of development of apertural plicae/denticles is also an individual feature (additionally, the types of several taxa here synonymised are immature). The syntypes of *M. capillacea* are rather narrow, with a slightly more pointed base than typical *coronata*, but I have seen apparently intermediate character states.

Cithara subgracilis Hervier, 1898, and *C. subgibbosa* Hervier, 1897, are probably further synonyms, being regarded as colour varieties of *zonata* by Bouge & Dautzenberg (*subgibbosa* being synonymised with 'var.' *semizonata*). As I have not seen type material (presumably housed in the Lyon Museum), I reserve any conclusion. Trew (1991) lists a syntype of *C. subgracilis* as NMWC 1955.158.1496.

There remains a number of problem taxa, which need further investigation. One such taxon is *M. celebensis*. Although Hedley (1922) and other authors recognised both *coronata* and *celebensis*, no statement as to their distinguishing characters has been traced, and comparison between their respective types reveals only minor differences of doubtful significance. These are: protoconch more narrowly conical in *celebensis*, 2,5 whorls, breadth 0,53 mm, b/h 0,91; smaller in size (apparently adult at 7,8 × 3,2 mm), shape rather more cylindrical than typical *coronata*. Another group of taxa, possibly synonymous with *coronata*, consists of *M. hornbeckii* (supposedly from the Caribbean), and *M. pallida* and *M. chionea*, based on worn shells. These three may represent an allied species, differing slightly in shape from *coronata*.



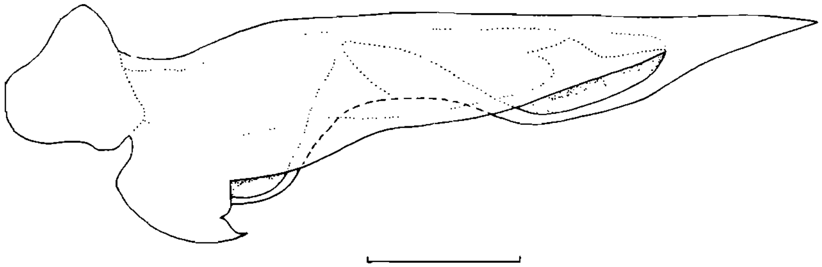
Figs 49–53. Possible synonyms of *Eucithara coronata* (Hinds, 1843): **49–50**, *Mangelia celebensis* Hinds, 1843, lectotype, BMNH 1879.2.26.94, 7,7 × 3,2 mm; **51**, *Mangilia (Cythara) chionea* Melvill & Standen, 1899, holotype, BMNH 1899.2.23.17, 7,7 × 3,4 mm; **52**, *Mangelia hornbeckii* Reeve, 1846, lectotype BMNH 1963460, 9,0 × 4,2 mm; **53**, *Mangelia pallida* Reeve, 1846, holotype, BMNH 1963459, 9,6 × 4,4 mm.

Gingicithara gen. n.

Type species: *Mangelia lyrica* Reeve, 1846.

Diagnosis: Shell oblong-fusiform, moderately small (5–15 mm), apex sharp, whorls convex, with a moderately deep suture, aperture fairly narrow, siphonal canal not terminally notched, prelabral varix present; axial ribs thin and close, crossed by spiral lirae, whose intervals bear fine spiral threads, which in turn are more or less cancellated by microscopic collabral threads, border of suture minutely prickly, columella callus very thin, smooth except for a weak parietal denticle or pad, outer lip with weak transverse plicae or a few posterior denticles. Protoconch conical, of 3–4 whorls, one or more of later whorls with opisthocline, arcuate axial ribs [in type species, at least, these ribs are replaced on base of each whorl by short prosocline riblets]. Radula consisting of hypodermic marginals; shaft short, base with a prominent spur, tip of tooth sharp but without blades or barbs, enfolding of plate secured by internal buttresses, basal opening large, distal opening fairly long.

Notes: This genus is proposed for *Mangelia lyrica*, which resembles *Eucithara* in general shell characters, but possesses different marginal teeth (Fig. 54); these lack barbs and blades, but bear a basal spur, which presumably facilitates gripping of the tooth by the proboscis. There is some resemblance in shell form to various Caribbean and tropical West American species referred to *Tenaturris* Woodring, 1928, but the radula of these (McLean 1971: figs. 134, 135) bears a powerful recurved barb, more comparable to that of true *Eucithara*. In *Gingicithara* the microsculpture is spiral or cancellate and the outer lip bears internal ridges or denticles, at least posteriorly, unlike any species hitherto referred to *Tenaturris*.



I associate here, on grounds of conchological similarity, a small number of Indo-Pacific species, which resemble *lyrica* in their thin, smooth labial callus, weak labral plicae and rather fine ribbing. These include *Mangelia cylindrica* Reeve, 1846, *M. pessulata* Reeve, 1846, *M. ponderosa* Reeve, 1846, *Mangilia albivestis* Pilsbry, 1934 (= *Mangilia pura* Pilsbry, 1904, *non* Reeve, 1846), *Pleurotoma (Mangilia) notabilis* E. A. Smith, 1888 (for synonymy *vide infra*) and *G. maraisi* sp. n. Another member of this genus may conceivably be *Pleurotoma triticea* Kiener, 1840, from 'l'Ocean Indien', although this species has not been recognised subsequently (*Pleurotoma* *triticea* of Reeve, 1843, was renamed *Cythara angiostoma* Pease, 1868). Kiener's description and figures (1840: 65, pl. 27, fig. 5) appear to portray a species similar to *cylindrica* but lower spired and more cylindrical. However it is also not impossible that *triticea* was based on an immature example of a true *Eucithara* such as *E. conohelicoides* (Reeve, 1846)!

Etymology: *Gingi[va] (= gums)* + *Cithara* (stem name for *Eucithara* genus complex), alluding to the more or less toothless peristome. Gender feminine.

Key to *Gingicithara* species in southern Africa

1 Spiral lirae on rostrum coarse and nodose; interstices between spirals deep, interval between each pair of main spirals with a single, granular thread; aperture almost linear, siphonal canal demarcated by a kink in base of outer lip, anal sinus slightly constricted .... **notabilis**

– Spiral lirae on rostrum fine, not nodose; interstices shallow, interval between each pair of main spirals occupied by a variable number of close spiral threads; aperture narrowly lanceolate, siphonal canal not differentiated from aperture, anal sinus not constricted 2

2 Main spiral lirae widely spaced, 9–12 on penultimate whorl, their intervals occupied by numerous microscopic spiral threads cancellated by axial plicules; outer lip plicate inside .... **lyrica**

– Spiral lirae close, wider lirae alternating with groups of finer lirae of different strengths, 25–32 on penultimate whorl; outer lip smooth, save for 1–2 posterior denticles .... **maraisi**

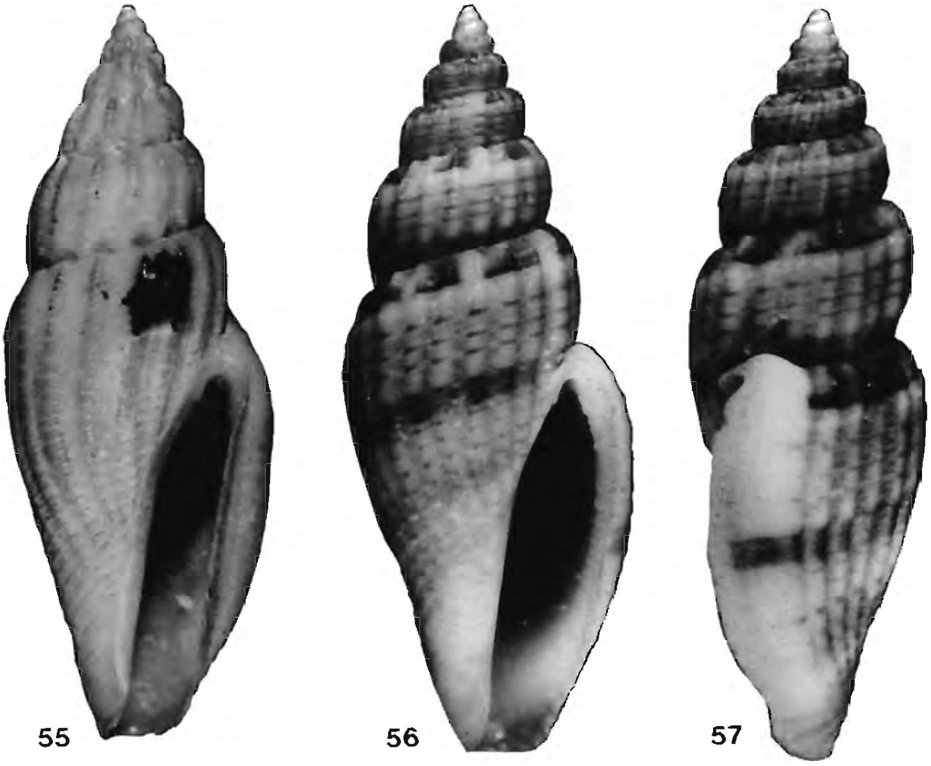
Gingicithara lyrica (Reeve, 1846) **comb. n.**

Figs 54–59

Mangelia lyrica Reeve, 1846a: pl. 3, sp. 20; *idem*, 1846b: 61. Type locality: Island of Burias, Philippines.
Mangilia lyrica; Tryon, 1884: 268, pl. 24, fig. 21.
Cythara cylindrica var; Smith, 1884b: 41, pl. 4, fig. H.
Cythara lyrica; Melvill, 1917: 181, pl. 10, fig. 3.
Eucithara lyrica; Hedley, 1922: 268.
Not: *Eucithara lyrica*; Cernohorsky, 1978: 155, pl. 55, fig. 11.

Diagnosis (local examples): Shell oblong-fusiform (b/l 0,36–0,38, a/l 0,49–0,53) with sharp apex and moderately deep suture, whorls fairly strongly convex, particularly subsuturally, sutural border not rising up previous whorl, early whorls with a slight, rounded shoulder, suture edged with a row of microscopic prickly granules; aperture moderately narrow, labial callus very thin, smooth except for a small parietal denticle; varix fairly large; outer lip with approximately 24 weak plicae, the posteriormost (level with anal sinus) nodiform. Axial ribs low, narrow, rounded in t/s, more or less equal to intervals, reaching suture but not rising, slightly sinuous, moderately opisthocline, 17–21 per whorl, crossed by thin, low, rounded, widely-spaced spiral lirae, 9–12 on penultimate whorl, with an occasional weaker intermediary, interstices with dense spiral striae, rendered microcancellate by collabral threads. Pale buff with a brown subsutural band. Protoconch narrowly conical, of about 3,7 whorls, with arcuate, opisthocline ribs from 2nd whorl, crests of ribs crenulate, base of whorl with short prosocline riblets; breadth [0,65–] 0,70 mm. Attains 13,4 mm.

Description (local examples): Shell cylindric-fusiform (b/l 0,36–0,38, a/l 0,49–0,53) with a produced, rather strongly tapering base, and sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls about 5,5 in number; suture fairly deep, not distinctly channelled nor regularly undulating, whorl profile convex with periphery situated above midwhorl, on first few whorls forming a rounded shoulder adapically, later whorls neither shouldered nor angular; subsutural region evenly convex, without trace of ridge or bordering concavity; siphonal canal fairly short, slightly oblique, tapering and fairly broad, somewhat differentiated from aperture, termination truncate, slightly oblique, not indented; left side of base shallowly concave, fasciole weak. Aperture moderately narrow, rather straight, tapering at each end, widest slightly behind median, outer lip somewhat effuse anteriorly; columella long and rather straight, curving very gently at junction with paries; labial callus very thin, its outer margin not free on columella, smooth except for a small nodule just below posterior end of paries, and sometimes the underlying sculpture showing through;



Figs 55–57. *Gingicithara lyrica* (Reeve, 1846): **55**, lectotype, BMNH 1963454, 13,3 × 4,7 mm; **56–57**, example from off Kosi Bay, 52 m, NMSA S3774, 13,4 × 5,2 mm.

outer lip preceded by a moderately thick, varicoid rib; edge of lip sharp and somewhat incurved, usually bordered internally by a series of approximately 24 weak plicae, which do not reach lip but extend well into the interior, the posteriormost one forming a small tubercle at level of anal sinus (in opposition to parietal nodule); lip moderately convex in side-view, anal sinus subsutural, moderately shallow and very asymmetrically U-shaped, stromboid notch very shallow and wide.

Sculptured by low, narrow, rather close axial ribs, not continuous from whorl to whorl, crossed by thin, low, widely-spaced spiral lirae; entire surface traversed by minute, dense collabral threads, interstices with microscopic spiral threads, forming a microcancellate sculpture (Figs 58, 59); suture bordered below by a row of microscopic, prickly granules. Axial ribs more or less equal in width to their intervals (which are gently concave), an occasional rib sometimes varicoid; crests of ribs rounded in t/s, their sides moderately sloping; orientation moderately opisthocline, sinuous, protractively curved below suture, extending from suture to suture and on body whorl continuing almost to base; 11–12 axial ribs on 1st teleoconch whorl, 17–21 on penultimate one. Spiral lirae rounded, much narrower than their intervals, which often bear a narrower intermediary lira, lirae finer and closer below suture; tops of lirae finely pliculated by collabral threads; 7–9 spirals on 1st whorl, penultimate whorl with 9-12, base of body whorl with approximately 19–21 lirae. Interstitial spiral threads close, median one usually slightly stronger than others.

Ground colour pale buff, with an orange-brown band below suture, aperture white.

Protoconch conical, of about 3,7 strongly convex whorls, first one small and tilted; initially smooth, axially ribbed from 2nd whorl, 21–22 thin, arcuate, opisthocline ribs on last whorl; crests of ribs transversely ridged under SEM (Fig. 57), base of ribs terminating a short distance above suture, the latter area occupied by a series of short, straight, prosocline riblets; breadth 0,70 mm, height 0,65–0,70 mm (b/h 1,00–1,07).

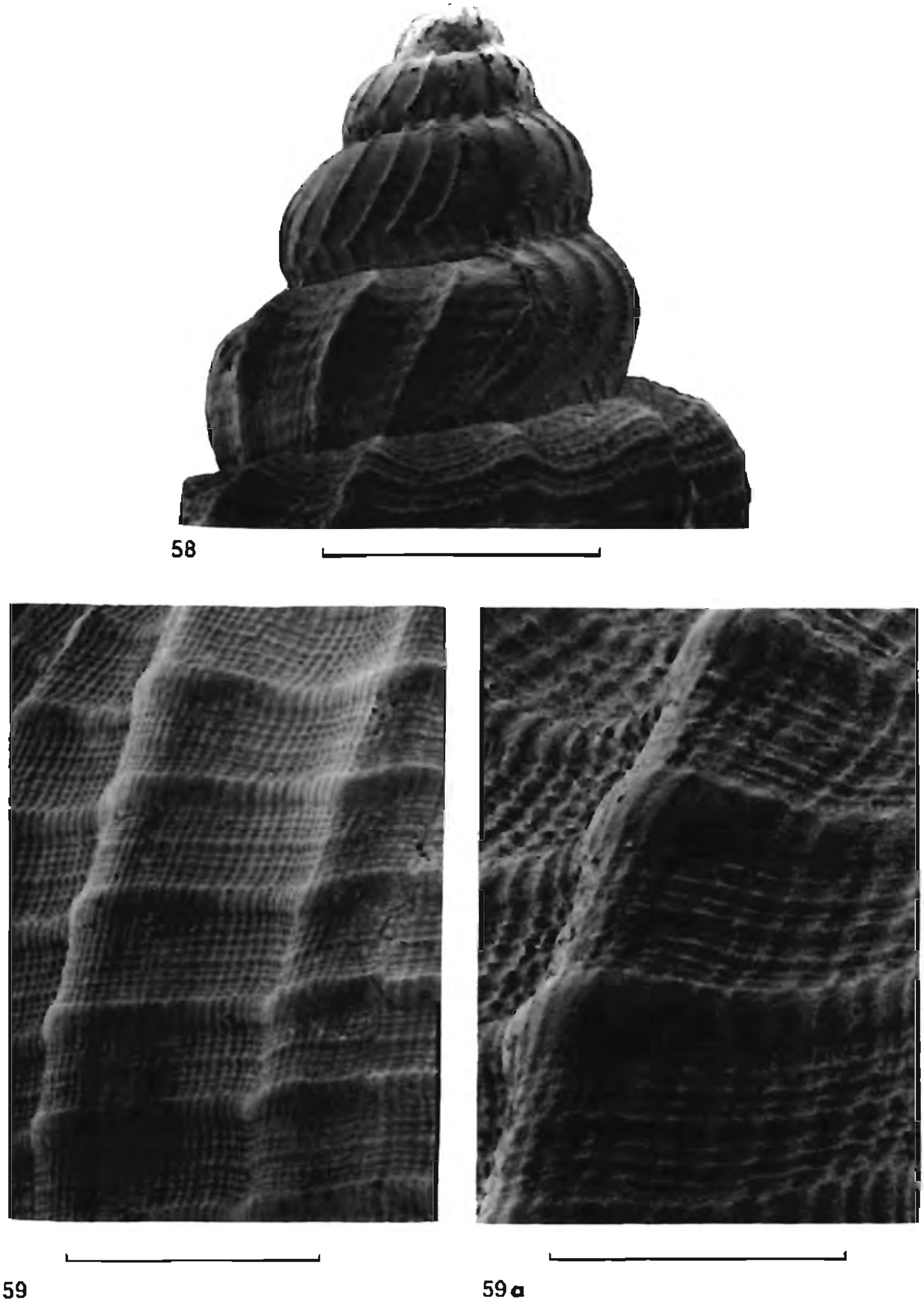
Dimensions: 13,4 × 4,8 mm.

Range: Philippines and northern Australia to northern Zululand.

Regional locality data: ZULULAND: off Kosi Bay, 52 m, lithothamnion pebbles, algae (NMSA S3774: NMDP); Leadsman Shoal, 100 m (NMSA B4020, B4023: A. Connell); off Boteler Point, 70 m, coral rubble (NMSA E7023: NMDP); N. E. of Liefeldt's Rocks, 50 m, lithothamnion, medium sand, dead coral rubble (NMSA E4299, E3428: NMDP); S. E. of Mission Rocks, 50 m, old coral rubble (NMSA E6255, E4655: NMDP).

Type material: Four syntypes of *Mangelia lyrica* are present in the BMNH, No 1963454, ex H. Cuming collection. The largest (marked by Smith with a dot of sealing wax) is here designated as lectotype (Fig. 55); it measures 13,3 × 4,7 mm.

The remaining three syntypes represent a different species, distinguishable from true *lyrica* by its more sharply tapering base and aperture, more convex whorls and smaller protoconch (breadth 0,55–0,60 mm, instead of 0,65–0,70 mm). Spiral sculpture also differs, consisting in these syntypes of fewer, stronger



Figs 58–59. *Gingicithara lyrica* (Reeve, 1846): SEM of protoconch and sculpture, specimen from off Boteler Point, Zululand, 70 m, NMSA E7023: **58**, protoconch and 1st teleoconch whorl, bar = 300 μ; **59-59a**, sculpture magnified, bar = 600 and 200 μ respectively.

lirae with wider intervals, which lack the well-developed intermediary lirae found in true *lyrica* (although intervals are microcancellate in both species). This may be the species wrongly illustrated as *lyrica* by Cernohorsky (1978: pl. 55, fig. 11).

Notes: Local specimens (Figs 56–57) agree well with the lectotype of *Mangelia lyrica*, other than in having slightly weaker ribs and more distinct colour pattern. Smith (1884), acting as first revisor, considered *Mangelia lyrica* to be a synonym of *M. cylindrica* Reeve, 1846. Tomlin (1934: 41) concurred, but Melvill (1917) expressed reservations, and Hedley (1922) recorded both from Queensland as distinct species. Comparison of the lectotype of *lyrica* (and local examples of it) with two syntypes of *cylindrica* (BMNH 1989143, Figs 172–173) shows the former species to differ in the whorls being distinctly inflated (rather than adpressed) below the suture, and in the protoconch being slightly larger (breadth 0,65–0,70 mm in *lyrica*, 0,55–0,60 mm in *cylindrica*). Smith and Tomlin were probably misled by the composite nature of the *lyrica* syntype series into overestimating its variability, although on the other hand it is not impossible that larger series will vindicate their action.

Gingicithara notabilis (E. A. Smith, 1888), **comb. n.**

Figs 60–73

Pleurotoma (Mangilia) notabilis E. A. Smith, 1888: 309. Type locality unknown, here designated as Mauritius.

Mangilia quadrasi Boettger, 1895: 16. Type locality: 'Inseln Catanduanes ... und Balabac bei Paragua'. **Syn. n.**

Mangilia (Cythara) euselma Melvill & Standen, 1896: 284, pl. 9, fig. 22; Trew, 1987: 40. Type locality: Lifou, New Caledonia. **Syn. n.**

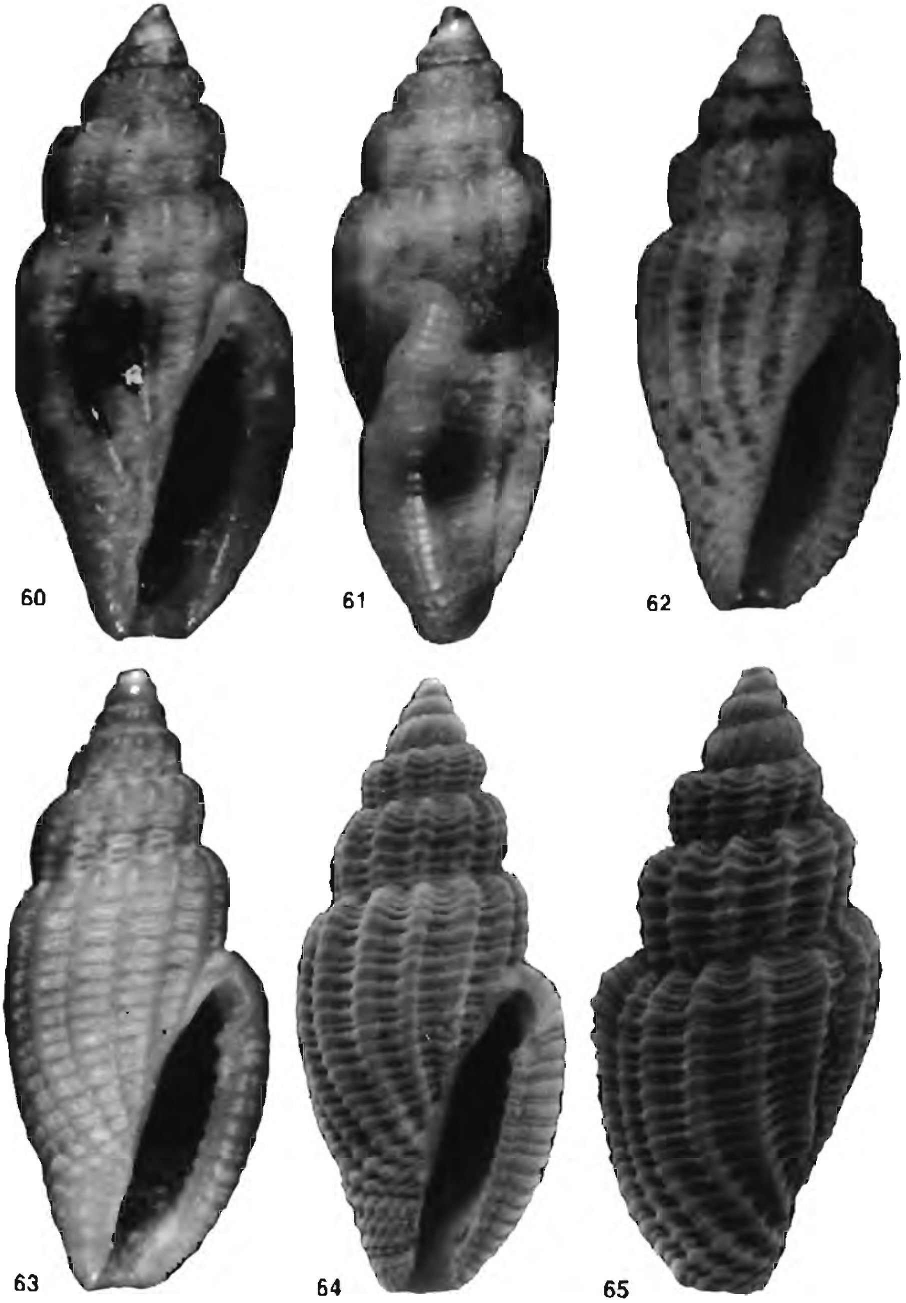
Mangilia euselma; Bouge & Dautzenberg, 1914: 149.

Mangilia euselma var. *evanescens* Bouge & Dautzenberg, 1914: 149. Type locality: Lifou, New Caledonia. **Syn. n.**

Mangilia eudeli Sowerby, 1901: 102, pl. 9, fig. 4. Type locality: St Pierre, Reunion Is. **Syn. n.**

Mangilia (Cythara) brunneolineata Preston, 1905: 3, pl. 1, fig. 8. Type locality: Ceylon. **Syn. n.**

Diagnosis: Shell oblong-biconic (b/l 0,42–0,47, a/l 0,48–0,53) with sharp apex and moderately deep suture, whorls fairly strongly convex, forming a distinct, rounded shoulder posteriorly, sutural border not rising up previous whorl, suture not edged with a row of microscopic scales; aperture narrow and rather linear, siphonal canal differentiated from aperture by a slight kink in labrum; labial callus very thin and flattened, smooth except for a low parietal pad; varix thick and steep; outer lip smooth or with up to 12 feeble denticles. Axial ribs somewhat compressed, angularly and slightly asymmetrically rounded in t/s, more or less equal to their intervals, reaching suture but not rising, slightly arcuate on spire whorls, strongly arcuate on body whorl, slightly procurved below suture, strongly opisthocline, 11–14 per whorl; spiral lirae regularly alternately wider and finer, with interstices deep, sometimes almost fenestrate; main lirae tabulate in rib intervals, with steep, minutely serrulated margins, becoming low and rounded where cross ribs, intermediary threads granular; spiral lirae totalling approximately 12–16 on penultimate whorl. Pale buff to white, with either (a) a diffuse to faint orange-brown subsutural band, usually interrupted, another at mid body whorl level, and a third basally, or (b) with spiral brown lines.



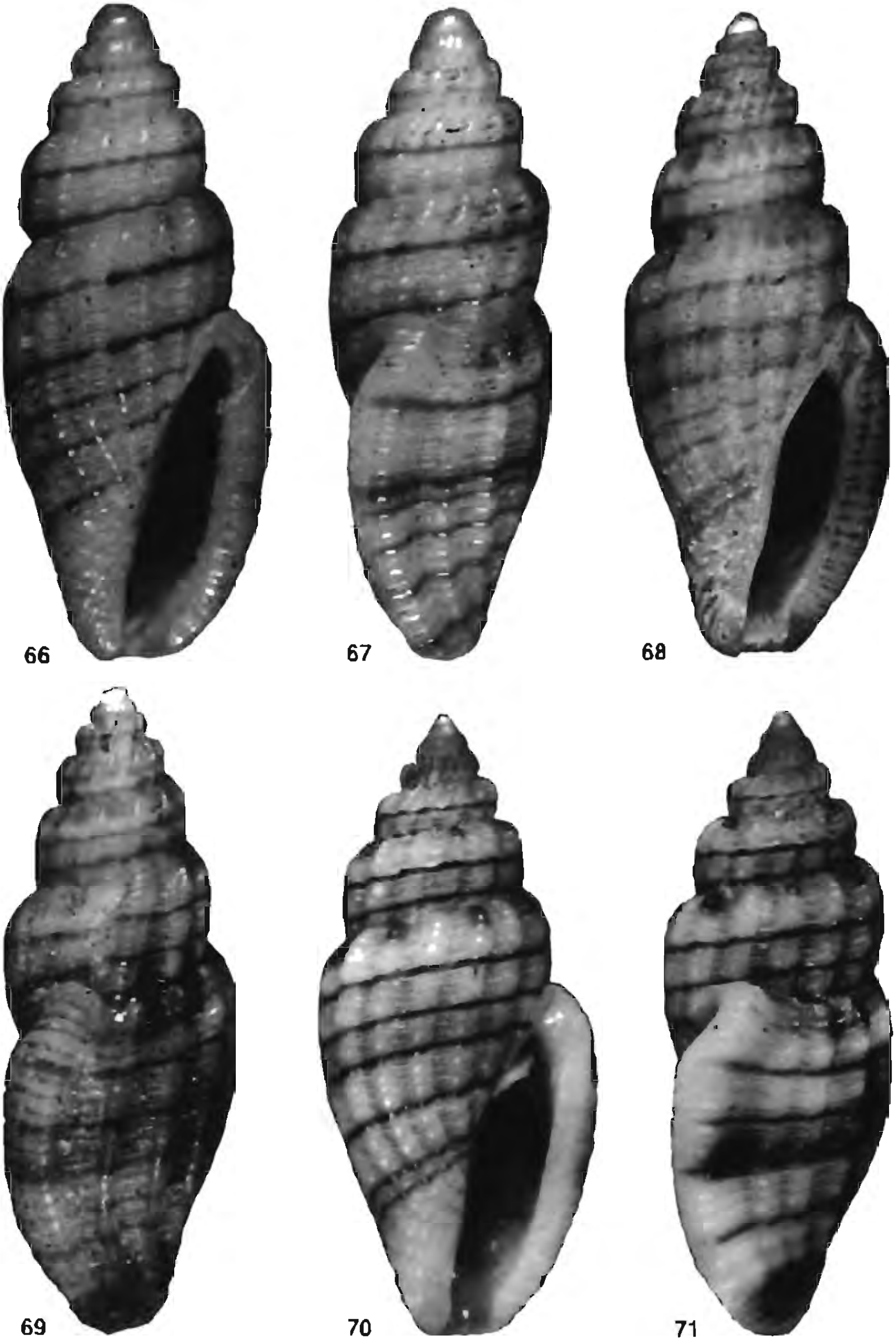
Figs 60–65. *Gingicithara notabilis* (Smith, 1888). **60–61**, lectotype of *Pleurotoma notabilis*, BMNH 74.5.26.37, 4,2 × 1,8 mm; **62**, lectotype of *Mangilia quadrasi* Boettger, 1895, SMFD 187461/1, length 3,4 × 1,6 mm, negative courtesy of Dr R. Janssen. **63**, lectotype of *Mangilia eudeli* Sowerby, 1901, BMNH 1902.5.28.4, 4,3 × 1,9 mm; **64**, SEM of example from Réunion Is, NMSA K7497, J. Drivas, 3,7 × 1,6 mm; **65**, SEM of example from New Caledonia, NMSA K7496, J.Drivas, 3,2 × 1,5 mm.

Protoconch conical, of 3,5 whorls, last two whorls axially ribbed, breadth 0,45–0,55 mm. Attains 5,7 mm.

Description: Shell oblong-biconic (b/l 0,42–0,47, a/l 0,48–0,53) with a moderately produced, rather strongly tapering but broad base, and sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls usually 3,5 or fewer (rarely up to 4,5 in number); suture fairly deep, not distinctly channelled, but rather regularly undulating, whorl profile convex with periphery situated at or above midwhorl, forming a distinct but rounded shoulder below suture; subsutural region evenly convex, without trace of ridge or bordering concavity; siphonal canal fairly short, rather straight, more or less linear and narrow, differentiated from aperture by a slight bend near base of outer lip, termination truncate, slightly to strongly oblique, not or shallowly indented; left side of base straight or shallowly concave, fasciole weak to moderate. Aperture narrow, rather linear and somewhat straight, tapering slightly at each end, curved to right posteriorly, widest near median, outer lip barely effuse anteriorly; columella fairly long and rather straight, curving very gently at junction with paries; labial callus very thin, its face more or less flat, its outer margin not free on columella, smooth except for a low parietal pad; prelabral varix thick, with rather steep trailing face; edge of outer lip somewhat incurved, interior smooth or with up to 12 weak denticles, of which the posterior one is the strongest; lip convex in side-view, anal sinus subsutural, moderately shallow and asymmetrically U-shaped with slightly constricted opening, stromboid notch shallow but distinct.

Sculptured by narrow, rather close axial ribs, not regularly continuous from whorl to whorl, crossed by alternately finer and stronger spiral lirae; entire surface traversed by microscopic, dense collabral threads, rendering the edges of the main spirals weakly serrulated, and the finer ones granular (Fig. 73); sutural border not microsquamulose. Axial ribs more or less equal in width to their intervals; slightly compressed, their crests angularly and slightly asymmetrically rounded in t/s; orientation rather strongly opisthocline, slightly arcuate on spire, strongly so on body whorl, slightly procurved just below suture, extending from suture to suture and on body whorl continuing well onto rostrum but becoming weaker behind lip; 11–14 axial ribs per whorl. Main spiral lirae tabulate where they cross interstices, with well-raised, sharply incised edges, becoming close, low and gently rounded where they cross axials; more or less wider than intervals, each of which bears a thin, granulose thread (which may strengthen to first-order size with growth), main spirals closer below suture, on rostrum coarse, close, rounded and rendered nodulose by terminations of axial ribs; interstices rather deep, almost fenestrate on base; 4–6 spirals on 1st whorl, penultimate whorl with 12–16 in total, base of body whorl with approximately 19–25 lirae.

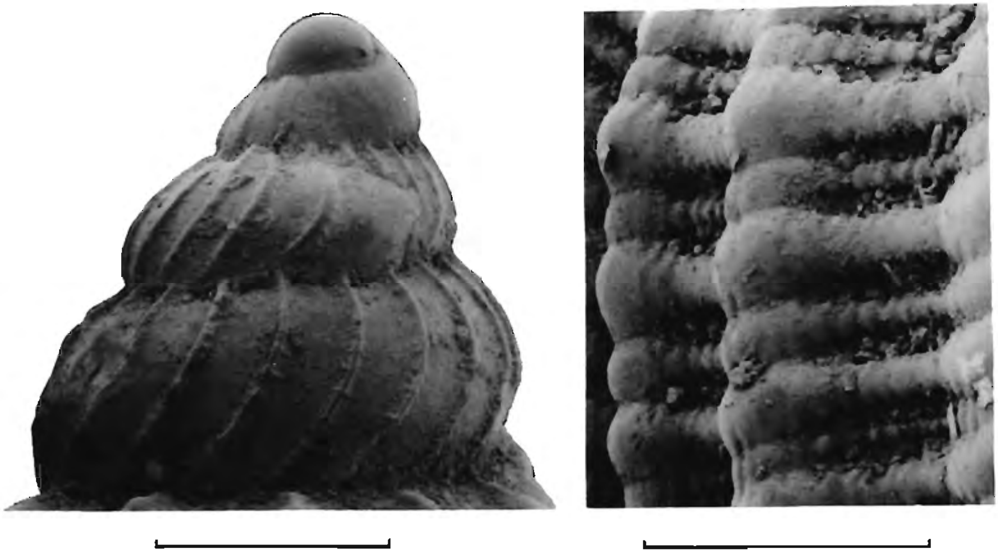
Ground colour buff to white, with two types of colour pattern: typically with a more or less faint orange-brown band below suture (often broken into spots, or only visible dorsally), dorsal surface of body whorl with a faint median band of orange-brown, terminating in a more or less conspicuous spot behind varix, and a third faint band around base; 2nd colour form with more or less conspicuous orange-brown spiral lines (1–2 on spire whorls, 5–7 on body whorl), usually also



Figs 66–71. *Gingicithara notabilis* (Smith, 1888), banded examples. **66–67**, lectotype of *Mangilia euselma* Melvill & Standen, 1896, MMUE EE3730, 4,5 × 1,9 mm; **68–69**, lectotype of *Mangilia brunneolineata* Preston, 1905, BMNH 1905.10.4.29-31, 5,7 × 2,4 mm; **70–71**, specimen from off Kosi Bay, Zululand, ca. 20 m, NMSA S729, 4,5 × 2,1 mm

with spots of this colour on ribs below suture; apex sometimes tinged with light orange, aperture white.

Protoconch conical, of about 3,5 whorls, initially smooth, last two whorls with thin, arcuate, opisthocline riblets, extending from suture to suture, and numbering 19–22 on last whorl; under SEM (Fig. 72) crests of ribs are seen to bear very short transverse plicae; breadth 0,45–0,55 mm, height 0,48–0,53 mm (b/h 1,04-1,10).



72 73

Figs 72–73. *Gingicithara notabilis* (Smith, 1880). **72**, SEM of protoconch, bar = 200 μ; **73**, SEM of sculpture, bar = 231 μ.

Dimensions: 5,7 × 2,4 mm (lectotype of *brunneolineata*); 4,5 × 2,1 mm (Zululand example); 3,4 × 1,5 mm (Riambel, Mauritius).

Distribution: New Caledonia to the Gulf of Aden and south to northern Zululand.

Regional locality data: ZULULAND: Kosi Bay, main reef, 1–4 km S. of estuary mouth, in sediment, ca. 20 m (NMSA S729: D. Herbert, R. Broker).

Type material: Two syntypes of *Pleurotoma notabilis* are registered as BMNH 74.5.28.4; one of these, measuring 4,2 × 1,8 mm, has been marked with a red dot, and is hence designated lectotype (Figs 60–61). Mauritius is designated as type locality, as during the 1991 Natal Museum expedition to this island it was found to occur in abundance at most stations.

A photograph of a syntype of the unfigured *Mangilia quadrasi* Boettger, 1895, in the SMFD collection, has been kindly provided by Dr Ronald Janssen, and shows this previously unfigured taxon to be another synonym of *notabilis*. This syntype (Fig. 62), selected as lectotype 187461/1, is the cited specimen from Balabac.

The figured syntype of *Mangilia euselma* (here designated lectotype, Figs 66–67) is registered as MMUE EE3730; it measures 4,5 × 1,9 mm (although part of the protoconch is missing). Three syntypes of *Mangilia eudeli* are BMNH 1902.5.28.4; a lectotype measuring 4,3 × 1,9 mm, is here designated (Fig. 63). Three syntypes of *M. brunneolineata* are registered as BMNH 1905.10.4.29–31, and another three as NMWC 1955.158.1464 (Trew 1991); the figured specimen from the BMNH collection (Figs 68–69), which measures 5,7 × 2,4 mm, is here designated lectotype.

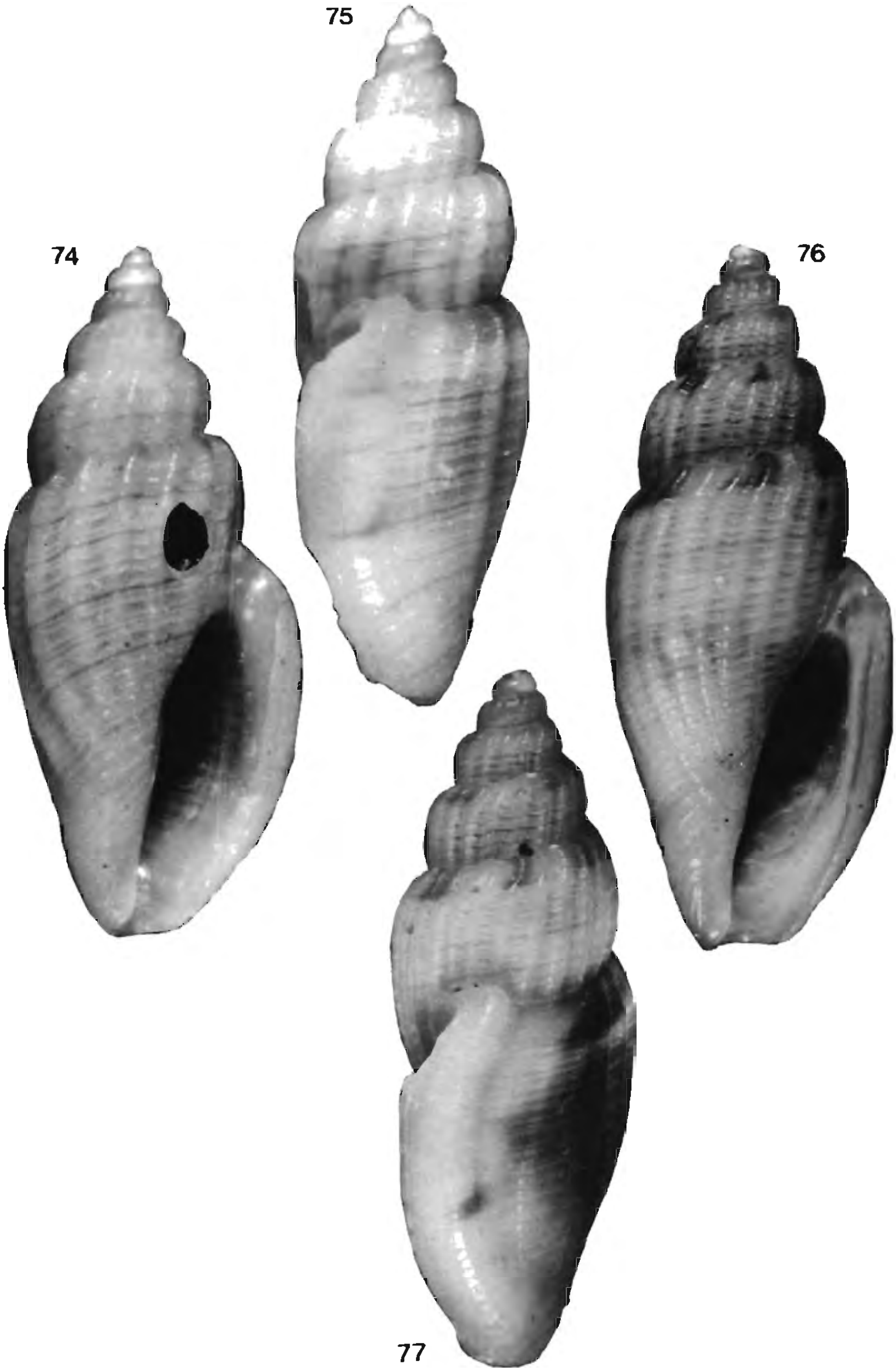
Notes: Although the identity of *Mangilia eudeli* with the earlier *M. euselma* has been noted by several authors, both names prove to be synonyms of the even earlier, but previously unfigured, *Pleurotoma notabilis*. At first sight Preston's *M. brunneolineata* appears slightly different on account of its colour pattern and larger size. However, the two paralectotypes of the taxon lack distinct lines, and closely resemble the syntypes of *notabilis* in coloration. Conversely, the lectotype of *euselma* and many Mascarene specimens have similar brown lines to the lectotype of *brunneolineata*, and the Zululand example (Figs 70–71) is particularly striking in this regard. The syntypes of *brunneolineata* are somewhat larger than most specimens seen, with about 4,5 teleoconch whorls and a length of 5,1–5,7 mm, against about 3,5 whorls and 3,8–4,5 mm. However, other examples from Sri Lanka are normal in size, and the Mauritius population ranges in shell length from 3,4 to 5,3 mm.

Gingicithara maraisi sp. n.

Figs 74–77

Diagnosis: Shell oblong-biconic (b/l 0,44, a/l 0,52) with sharp apex and moderately deep suture, whorls fairly strongly convex, forming a well-rounded shoulder posteriorly, sutural border not rising up previous whorl, suture edged with a row of microscopic scales; aperture moderately narrow, siphonal canal not clearly differentiated from rest of aperture; labial callus very thin and fairly rounded in profile, smooth except for low parietal pad; varix thick; outer lip smooth inside, save for 1–2 feeble denticles posteriorly. Axial ribs low, narrow, rounded in t/s, leading slope distinctly concave, wider than their intervals, reaching suture but not rising, rather straight (except below suture where they curve strongly), strongly opisthocline, 17–19 per whorl, crossed by low, flattened (but not tabulate), closely-spaced spiral lirae; regular wider spiral lirae are interspersed between finer lirae of several orders of strength and number, totalling approximately 25–32 on penultimate whorl, tops of lirae rendered weakly pliculate by microscopic collabral threads. Pale buff to white with a brown subsutural band, usually interrupted, often darker dorsally, rarely with spiral brown lines. Protoconch conical, of approximately 3,0 whorls, last whorl axially ribbed, breadth 0,55 mm. Attains 8,5 mm.

Description: Shell oblong-biconic (b/l 0,44, a/l 0,52) with a moderately produced,



Figs 74–77. *Gingicithara maraisi* sp. n.: **74–75**, holotype, NMSA E8300/T301, 5,2 × 2,3 mm; **76–77**, paratype, NMSA E5238/T300, 7,9 × 3,4 mm.

rather strongly tapering but broad base, and sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls about 5,0 in number; suture fairly deep, not distinctly channelled, but rather regularly undulating, whorl profile convex with periphery situated above midwhorl, forming a well-rounded shoulder below suture; subsutural region evenly convex, without trace of ridge or bordering concavity; siphonal canal fairly short, slightly oblique, tapering and fairly broad, not clearly differentiated from aperture, termination truncate, slightly oblique, not or shallowly indented; left side of base shallowly concave, fasciole weak. Aperture narrowly lanceolate, rather straight, acutely tapering posteriorly, truncate and less tapering anteriorly, widest near median, outer lip barely effuse anteriorly; columella fairly long and rather straight, curving very gently at junction with paries; labial callus very thin, rather rounded in section, its outer margin not free on columella, smooth except for a low parietal pad; outer lip preceded by a thick varix; edge of lip somewhat incurved, interior smooth, except usually for 1–2 weak denticles at lower border of anal sinus; lip convex in side-view, anal sinus subsutural, moderately shallow and somewhat roundedly L-shaped (in reverse), stromboid notch very shallow and narrow.

Sculptured by low, narrow, rather close axial ribs, not continuous from whorl to whorl, crossed by close, flattened spiral lirae of several orders of strength; entire surface traversed by minute, dense collabral threads, rendering crests of spirals weakly pliculate; suture bordered below by a row of inconspicuous, microscopic scales (easily eroded away). Axial ribs somewhat wider than their intervals (which are asymmetrically concave); crests of ribs rounded in t/s, their leading slope slightly concave, their trailing one slightly convex; orientation rather strongly opisthocline, fairly straight, except below suture where they are strongly, protractively curved, extending from suture to suture and on body whorl reaching rostrum; 13–14 axial ribs on 1st teleoconch whorl, 17–19 on penultimate one, becoming weak behind varix. Spiral lirae flattened (but not tabulate), with narrow intervals; intermediary lirae of various strengths, 1–3 per interval, but sometimes intergrading in strength with main lirae; lirae fine and relatively uniform below suture, close and even on rostrum; about 8 spirals on 1st whorl, penultimate whorl with approximately 25–32 in total.

Ground colour buff to white, with an orange-brown band below suture (often broken into blotches or only visible dorsally), dorsal surface of body whorl often darker; rarely with widely-spaced brown spiral lines; aperture white.

Protoconch conical, of approximately 3 whorls (1st one missing), smooth, except for last whorl which bears thin, arcuate, opisthocline riblets; breadth 0,55 mm.

Dimensions: 5,2 × 2,3 mm (holotype); 8,5 × 3,5 mm (largest paratype, protoconch missing).

Distribution: Durban to eastern Transkei, empty shells littoral to 20 m.

Type material: Holotype NMSA E8300/T301, off Durban Bluff, from sand dredged in about 20 m, Dr J. P. Marais. Paratypes 1–3, NMSA E8278/T302, Mzamba, just south of Mtamvuna River, in shell debris, Dr J. P. Marais; 4, NMSA E5238/T300, do, R. K., D. G. Herbert. Paratypes 5–6, NMSA B4204/T717, Shelley Beach, S. of Port Shepstone, beach drift, Mrs R. Cock.

Notes: I have selected as holotype a relatively fresh but small specimen of only three teleoconch whorls. Practically all other specimens examined are beach-worn and have lost the protoconch, the apex being plugged with shell matrix.

The most similar species is *Gingicithara notabilis* (Smith, 1888) (see above). That is a smaller species (attaining only 5,7 mm in maximum length) with a much narrower, more linear aperture, with the siphonal canal straightened and its junction with the rest of the aperture defined by a slight 'kink' in the base of the outer lip (instead of being oblique and ill-delimited) and the inner columella face is flattened in section (rather than slightly rounded). Furthermore, in *maraisi* the anal sinus is not constricted as it is in *notabilis*, the outer lip bears at most a few feeble denticles posteriorly, the spiral lirae are more numerous and much less crisp, with finer intermediaries that are irregular in strength and number, with much shallower interstices, and the rostral lirae are much finer and are not nodose as in *notabilis*.

Compared with *Gingicithara lyrica* (Reeve, 1846), the body whorl in *G. maraisi* is shorter and more obconical, the spiral lirae are much closer and more numerous, and the outer lip lacks internal plicules. The Erythraean *Eucithara bisacchii* (Hornung & Mermod, 1928) is also comparable, but has distinct labral denticles, only 11 axial ribs on the body whorl, and finer spiral sculpture (about 38 lirae on the penultimate whorl).

Etymology: Named in honour of Dr J. P. Marais, who collected most of the type material.

Citharomangelia gen. n.

Type species: *Mangilia (Eucythara) africana* Sowerby, 1903.

Diagnosis: Shell moderately small (4–25 mm), more or less narrowly fusiform, with relatively high spire, sharp apex and gradually tapering base; siphonal canal with shallowly indented termination; aperture narrow, inner lip with a microscopically granular callus, bearing transverse plicae, outer lip preceded by a massive varix, internally with low transverse plicae, anal sinus rounded, rather shallow, occupying most of shoulder slope, stromboid notch usually distinct; sculptured by low, suture-to-suture axial ribs, crossed by weak spiral threads. Protoconch small, conical, with tilted initial whorl, smooth except for axial riblets on last whorl. Radula of lanceolate marginal plates, folded at the midline (i.e. V-shaped in t/s), without barbs.

Notes: As figured by Barnard (1958: fig. 8d), the peculiar radula of *'Mangilia' africana* differs widely from the hypodermic teeth of *Eucithara* and *Gingicithara*, and the somewhat dagger-shaped plates of *Mangelia s.s.* I therefore propose a new genus for it. Judged on shell-characters (slender form, weak spiral sculpture), other probable members of *Citharomangelia* include the following: *Mangelia townsendi* Sowerby, 1895, from the Arabian Sea and Persian Gulf, and *Mangilia galigensis* Melvill, 1899, from the same area (although Powell (1966: 97) considered *townsendi* to be 'definitely a *Mangelia*', the distinctly denticulate peristome does not occur in members of that genus); *Pleurotoma (Mangelia) boakei* G. & H. Nevill, 1869, and *Mangelia bicinctula* G. & H. Nevill, 1871, from Sri

Lanka, *Cithara seychellarum* E. A. Smith, 1884, from the Seychelles, *Pleurotoma (Mangilia) denticulata* E. A. Smith, 1884, from Mauritius, *Mangilia planilabroides* Tryon, 1884 (= *Mangelia planilabrum* Reeve, 1846, *non Pleurotoma planilabrum* Reeve, 1843) from the Philippines, *M. pellucida* Reeve, 1846, and *Cithara richardi* Crosse, 1872, from the Indo-Pacific, and possibly *Cythara quadrilineata* Sowerby, 1913, from Japan. In the appendix to this paper I have illustrated type specimens of all these species, save *M. bicinctula*, the types of which are presumably in the Indian Museum.

Etymology: *Cithara* + *Mangelia*, combining the shell characters of these two mangeliine genera. Gender feminine.

Key to species of *Citharomangelia* in southern Africa and Mozambique

1 Shell biconic-fusiform, b/l 0,38–0,44; axial ribs 7–9 on later whorls; spiral sculpture of microscopic scratches; outer lip with 9-12 plicae, posteriormost one nodiform .... **richardi**

– Shell narrowly fusiform, b/l 0,29–0,34; axial ribs 11–12 on later whorls; spiral sculpture of fine threads; outer lip with 18–22 plicae, which do not become nodiform posteriorly .... **africana**

Citharomangelia africana (Sowerby, 1903) **comb. n.**

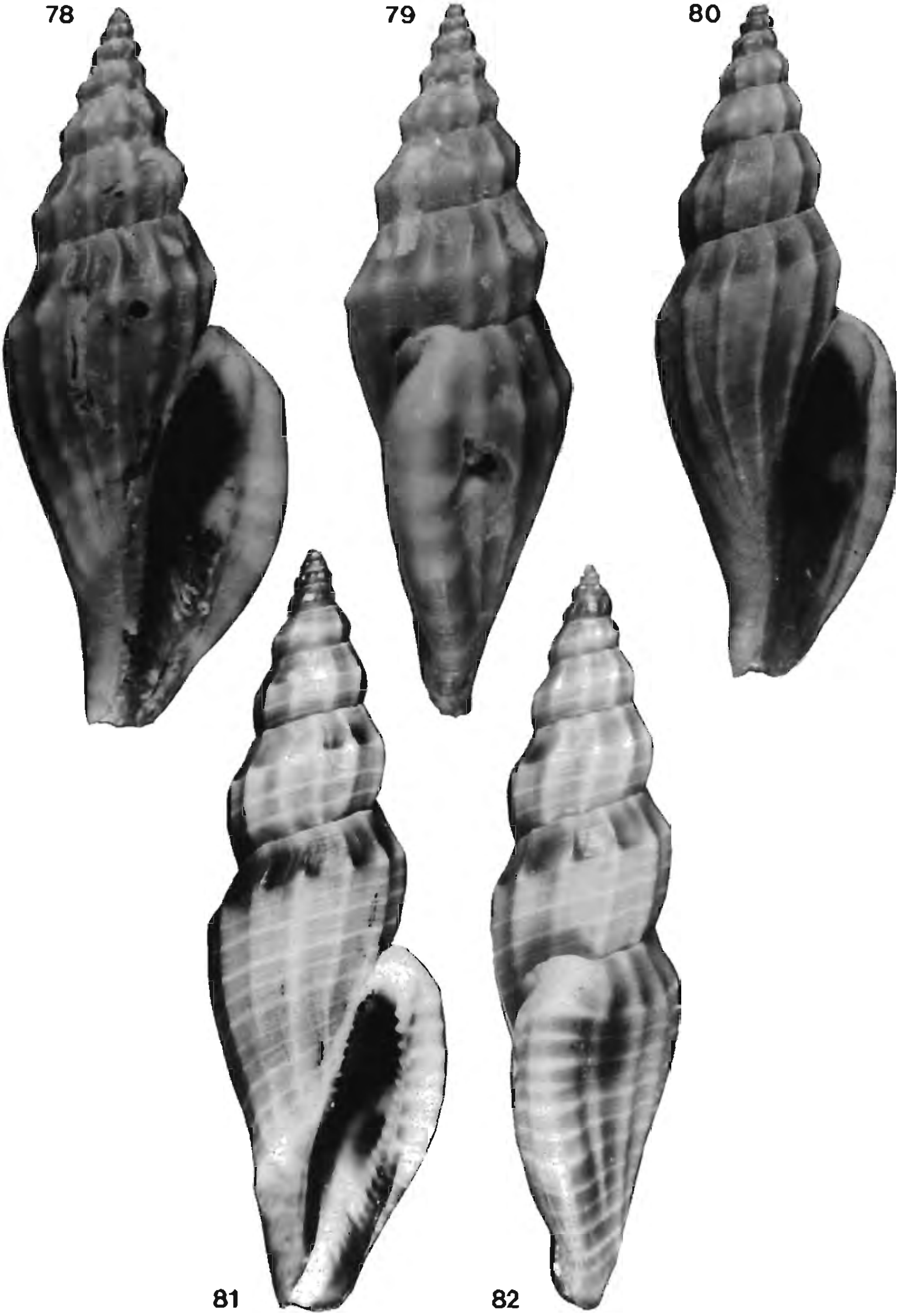
Figs 78–84

Mangilia (Eucythara) africana Sowerby, 1903: 216, pl. 5, fig. 9; Giles & Gosliner, 1983: 32. Type locality: 2,75 mi. off Umhloti [Mdloti] River, 25 fathoms [= 46 m].

Cythara africana; Barnard, 1958: 115, figs 8d (radula), 10a (protoconch).

Diagnosis: Shell narrowly fusiform (b/l 0,29–0,34, a/l 0,44–0,49), whorls with weak peripheral angle at or slightly above midwhorl on later whorls, subsutural slope weakly concave, at suture slightly adpressed against previous whorl; aperture narrow, labial callus fairly thick, bearing 20–26 low, transverse plicae, weak medially (and sometimes overall); varix massive; outer lip with 18–22 low plicae, not becoming markedly dentiform or prominent posteriorly. Axial ribs thin, low, roundedly angular in t/s, much narrower than intervals, above periphery weaker and strongly arcuate, numbering 11–12 on later whorls, crossed by thin, flattened, very low spiral threads, 36–40 on penultimate whorl. Flesh-coloured to pale orangebrown, usually with pale spiral lines, subsutural region and base darker orange-brown, varix barred with vivid brownish-orange. Protoconch narrowly conical, of about 2,3 whorls, last half-whorl axially ribbed, breadth 0,50-0,55 mm. Attains 21,4 mm.

Description: Shell narrowly fusiform (b/l 0,29–0,34, a/l 0,44–0,49) with a strongly produced, tapering base and sharp, more or less orthoconoid spire; teleoconch whorls about 7,3 in number; suture moderately shallow, not or only slightly undulating, whorl profile convex with a slightly angular periphery situated at about midwhorl (slightly below midwhorl on early whorls, above on later ones), forming a slight, sloping shoulder on later whorls; shoulder slope shallowly concave, no subsutural ridge; siphonal canal long, rather straight, parallel-sided

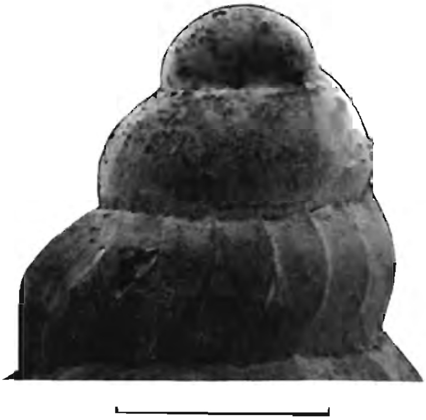


Figs 78–82. *Citharomangelia africana* (Sowerby, 1903): **78–79**, lectotype, SAMC A345, 19,5 × 7,5 mm; **80**, paralectotype, BMNH 1903.7.27.75, 20,0 × 7,0 mm; **81–82**, slender example, NMSA D9802, between Bhanga Nek and Kosi Bay, 34 m, 19,6 × 5,8 mm

and wide, poorly differentiated from aperture, its termination straight, very shallowly indented, left side of base usually only slightly concave, fasciole feeble or absent. Aperture narrow, rather straight and somewhat parallel-sided, outer lip somewhat effuse anteriorly; columella long and straight (occasionally slightly sinuous), curving gently at junction with paries; labial callus fairly thick, its outer margin slightly free on columella, microscopically granulose, bearing a row of low (sometimes rather weak), transverse plicae, which generally number 20–26, although the median ones may be obsolete or irregular; outer lip preceded by a moderately thick, varicoid rib; edge of lip sharp and somewhat incurved, bordered internally by a series of 18–22 plicae, which do not reach lip but extend well into the interior, the anteriormost ones being strongly oblique; lip gently convex in side-view, anal sinus subsutural, shallow and asymmetrically U-shaped (almost L-shaped), stromboid notch shallow but wide.

Surface somewhat glossy, sculptured by thin, low axial ribs, not continuous from whorl to whorl, crossed by fine, very low and close-set spiral lirae. Axial ribs much narrower than their intervals (which are gently concave), their crests roundedly angular in t/s, their sides gradually and concavely sloping; orientation opisthocline, rather sinuous, protractively curved on subsutural slope, extending from suture to suture, although weaker above periphery, on body whorl continuing some distance onto rostrum; 9–11 axial ribs on 1st teleoconch whorl, 12 (rarely 11) on later ones. Entire surface covered by thin, flattened spiral lirae, much wider than their intervals, particularly towards base of each whorl, under SEM (Fig. 84) seen to be alternately more or less weaker and stronger; lirae finest on shoulder slope, feeble on early whorls, penultimate whorl with 36–40, base of body whorl with approximately 50–60 lirae, those on rostrum somewhat rounder and more widely-spaced.

Ground colour flesh to pale orange-brown, usually in the form of narrow spiral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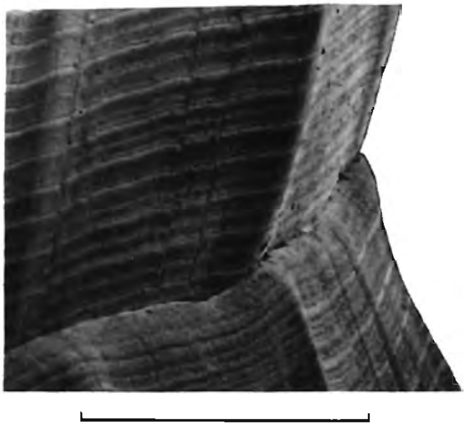
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Figs 83–84. *Citharomangelia africana* (Sowerby, 1903): SEM of protoconch and sculpture of specimen from S.E. of Kosi Bay, 50 m, NMSA D8764: **83**, protoconch, bar = 250 μ; **84**, sculpture, bar = 860 μ.

bands, separated by paler lines, intervals between spiral lirae often with a hyaline appearance; apex and base of rostrum darker orange-brown, varix barred with vivid brownish-orange, usually preceded below periphery by an irregular dark blotch; shoulder slope demarcated by a row of brownish-orange markings situated behind each rib, and the entire slope (as well as an obscure mid-body whorl zone) sometimes tinged with grey; aperture and peristome basically white, inner lip heavily stained with dark orange-brown, interior of outer lip variably blotched with the same colour, edge of outer lip with flecks of orange. A sample from Mozambique is mostly off-white, with faint brownish-orange transverse zones on the back of the last whorl, orange spots above the shoulder and a small brown blotch on the early part of the spire.

Protoconch (Fig. 83) narrowly conical, of about 2,3 whorls, nucleus strongly tilted; smooth, except for last half-whorl, which bears thin, slightly arcuate, axial riblets; breadth 0,50–0,55 mm, height 0,45–0,58 mm (b/h 0,95–1,22).

Dimensions: 21,4 × 6, 4 mm.

Radula: see Barnard (1958: Fig. 8d).

Range: Continental shelf of northern Natal and Zululand in 34–50 m, and littoral of northern Mozambique.

Locality data (all NMSA: NMDP, unless otherwise stated): NATAL: off Mdloti River, 25–27 fathoms (Barnard 1958). ZULULAND: off Gypsy Hill, 50 m (E4223); off Jesser Point, 54 m, medium sand (D9135); off Gobey's Point, 44–66 m, sand, shell rubble (D7156); off Hully Point, 40 m, very fine muddy sand (D8996); off Boteler Point, 50 m, dead coral rubble (D7755); between Bhanga Nek and Kosi Bay, 34 m, sand off outer edge of No 13 reef (D9802: dived D. Herbert); S.E. of Kosi Bay, 40 m, fine sand (D8775), do, 45–47 m, red algae, sponges (D6291); do, 48 m, sand and rubble (D8735); do, 50 m, fine sand, shell rubble, fine slightly muddy sand (D8312, D8351, D7246, D7015, D8764); off Kosi Bay, 45 m, fine muddy sand (D6000). MOZAMBIQUE: Conducia Bay (H5586: K. Grosch).

Type material: Lectotype (designated Barnard 1958) SAMC A345 (Figs 78–79), paralectotypes SAMC A33954 and BMNH 1903.7.27.75 respectively, one each. The BMNH syntype (Fig. 80) is the only undamaged type specimen and accords with the figures and measurements given by Sowerby. However, Barnard's reference to a SAMC syntype (dimensions 19,5 × 7,5 mm) as 'the Type' fixes its lectotype status under ICZN article 74(a). Giles & Gosliner (1983) incorrectly cited the two SAMC types as 'Holotype' and 'Paratype'.

Notes: The sample from northern Mozambique consists of four more or less worn adults and two fresh juveniles. They are much paler than South African specimens (apart from one very worn example), and have a protoconch that is proportionately slightly narrower (b/l 1,22 against 0,95–1,18). This is regarded as of geographical significance only.

Sowerby compared his *africana* with the rather dissimilar *Eucithara funiculata* (Reeve, 1846). More closely comparable are *Mangilia galigensis* Melvill, 1899, *Pleurotoma (Mangelia) boakei* G. & H. Nevill, 1869, and *Pleurotoma (Mangilia)* *denticulata* E. A. Smith, 1884. Of these, *Citharomangelia galigensis* (Fig. 178) in fact appears extremely similar to *africana*, but has only 7 axial ribs on the penultimate whorl (instead of 11–12), the sides of the ribs slope more gradually and spiral sculpture is more ill-defined. *C. boakei* (Fig. 177) is much smaller than *africana*, with evenly convex whorls and axial ribs that are not arcuate below the suture. *C. denticulata* (Fig. 179) is similarly smaller, and lacks any trace of a shoulder angulation. Also comparable is *C. townsendi* (Sowerby, 1895) from the Persian Gulf and Arabian Sea, which differs in its larger size and different coloration (similar in pattern, but of a greenish-grey hue in *townsendi*).

The southernmost limit of the range of *C. africana* probably lies much further south than that indicated. I have examined a worn specimen, apparently of this species, collected by Dr J. P. Marais in beach drift at Mzamba, just south of the Mtamvuna River in eastern Transkei.

Citharomangelia richardi (Crosse, 1869) **comb. n.**

Figs 85–90

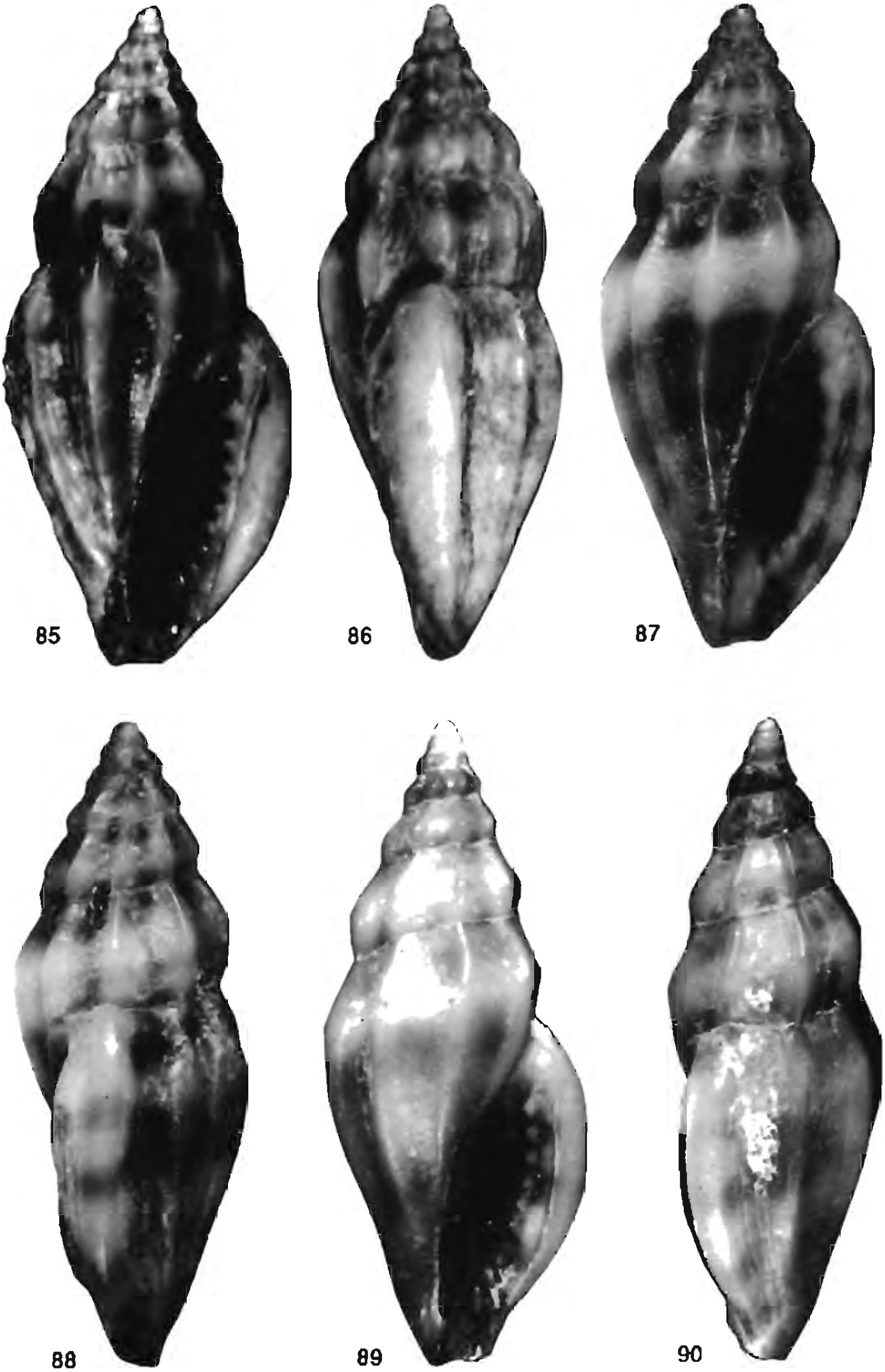
Cithara richardi Crosse, 1869: 177; *idem*, 1872: 65, pl. 2, fig. 3. Type locality: Noumea, New Caledonia.

Mangilia (Cithara) richardi; Bouge & Dautzenberg, 1914: 164.

Mangilia cinnamomea peraffinis Pilsbry, 1904: 10, pl. 2, figs 12, 12a. Type locality: Hirado, Hizen, Japan. **Syn. n.**

Diagnosis of species: Shell more or less biconic-fusiform (b/l 0,38–0,44, a/l 0,42–0,49), whorls with a slight to distinct peripheral angle at or slightly below midwhorl, subsutural slope flat or weakly concave, at suture slightly adpressed against previous whorl; aperture narrow, labial callus fairly thick, bearing 9–14 low, transverse plicae; varix massive; outer lip with 9–12 moderately strong plicae, becoming dentiform posteriorly, posteriormost denticle prominent. Axial ribs rather compressed, moderately low, more or less roundedly-angular in t/s, narrower than intervals, above periphery weaker and barely or not arcuate, numbering 7–9 on later whorls, crossed by faint, scratch-like spiral striae, forming feeble threads on base, Durban Bay population also with a weak thread at periphery. Orange-brown to dark greyish-brown, peripheral region (and sometimes entire area above periphery) whitish, varix barred with brownish-orange. Protoconch narrowly conical, of about 2,6 whorls, last whorl axially ribbed, breadth 0,38–0,55 mm. Attains 8,6 mm.

Description (based on local material only): Shell fusiform to biconic-fusiform (b/l 0,38–0,44, a/l 0,42–0,49) with a produced, strongly tapering, somewhat constricted base and sharp, more or less orthoconoid spire; teleoconch whorls about 5,5 in number; suture shallow, sometimes slightly undulating; whorl profile weakly angular with periphery situated at or just below midwhorl, profile flat or slightly concave above periphery, flat or slightly convex below; outer lip with sloping shoulder; no subsutural ridge, but sutural margin tightly adpressed against previous whorl; siphonal canal moderately short, slightly oblique, more or less parallel-sided and wide, distinctly differentiated from aperture, its termination oblique and somewhat rounded, not indented; left side of base



Figs 85–90. *Citharomangelia richardi* (Crosse, 1869): **85–86**, holotype of *Cithara richardi*, MHNP, 7,2 × 3,2 mm; **87–88**, lectotype of *Mangilia cinnamomea peraffinis* Pilsbry, 1904, ANSP 85952, 7,1 × 3,1 mm; **89–90**, Durban Bay example, NMSA D158, 7,3 × 3,2 mm.

slightly to moderately concave, fasciole absent. Aperture narrow, rather straight and somewhat parallel-sided, outer lip somewhat effuse anteriorly; columella long and straight, curving gently at junction with paries, which is proportionately very short; labial callus fairly thick, its outer margin slightly free on columella, bearing a row of 12–14 low and rather short transverse plicae, strongest medially; outer lip preceded by a thick, varicoid rib; edge of lip sharp, bordered internally by a series of 10–12 short plicae, becoming dentiform towards anal sinus, posteriormost one relatively large and tubercle-like, the anteriormost ones strongly oblique; lip gently convex in side-view, anal sinus slightly below suture, rather shallow and asymmetrically U-shaped; stromboid notch slight.

Surface glossy, sculptured by thin but strong axial ribs, sometimes continuous from whorl to whorl, spiral sculpture of fine, dense, very shallow scratches (present overall in types), forming feeble lirae mainly on base of body whorl, and (in Durban Bay population) a weak peripheral thread. Axial ribs narrower than their intervals (which are gently concave to somewhat flattened), their crests angular in t/s, their sides concavely sloping; orientation barely opisthocline, rather straight, not protractively curved on shoulder slope, extending from suture to suture, although weaker on shoulder slope, on body whorl continuing some distance onto rostrum; 8–10 axial ribs on 1st teleoconch whorl, 7–9 on later ones.

Colour (faded examples) light orange-brown, darkest at mid-body whorl and on base, ribs paler, peripheral region with an ill-defined whitish zone, sometimes extending to suture; inner lip brownish-orange, aperture with two bands of that colour on a white ground, back of lip usually with several brownish-orange spiral bands on a pale ground; protoconch yellowish-brown, earliest teleoconch whorls dark.

Protoconch narrowly conical, of about 2,6 whorls, nucleus strongly tilted; smooth, with opisthocline axial riblets on last whorl; breadth 0,50–0,55 mm, height 0,50 mm (b/h 1,00, N = 1).

Dimensions: 7,5 × 3,1 mm; attains 8,6 × 3,4 mm (apex broken).

Range: New Caledonia and Japan to Natal.

Type material: Holotype (Figs 85–86) of *Cithara richardi* is in MHNP. Two syntypes of *M. cinnamomea peraffinis* are accessed as ANSP 85952, *ex* Y. Hirase, 1903; the larger figured specimen (see also Figs 87–88), which measures 7,1 × 3,1 mm, is here designated lectotype.

Regional locality records: NATAL: Durban Bay, shallow dredgings (NMSA B1912, D158: B. J. Young). SOUTHERN MOZAMBIQUE: S. of Santa Carolina Island, Bazaruto Archipelago, beach-drift on sandbank (K4261: R. K.).

Notes: Only faded, more or less worn shells are known from southern Africa, mostly taken from reclamation dumps in Durban Bay. These (Figs 89–90) agree well with the holotype of *C. richardi* and the lectotype of *M. c. peraffinis*, other than in having a more angular periphery, which bears a slight spiral thread, slightly narrower proportions (b/l 0,40–0,41, against 0,44), slightly more widely-spaced axial ribs and a slightly larger protoconch (breadth 0,50–0,55 mm against 0,38 mm and 0,45 mm respectively). Differences such as these are not unexpected between populations (one a peripheral isolate) at opposite ends of the Indo-West Pacific; indeed, one of the two Mozambican examples examined appears intermediate, agreeing exactly with the types in shape (b/l 0,44, a/l 0,49) and whorl profile, and lacking any trace of a peripheral lira. The ground colour in the syntypes of *peraffinis* is dark greyish-brown (almost purplish) with a broad white peripheral zone, while the later part of the body whorl is pale with 5 brownish-orange bands. The holotype of *richardi* is brownish with paler ribs, and a grey zone below the suture and another between the ribs at mid body whorl level. The microsculpture of spiral scratches that is present in the types of *peraffinis* is no longer visible in the worn local specimens, and is only barely discernible in the holotype of *richardi*.

The original figures of *C. richardi* were inadequate, and the species has escaped recognition by most subsequent authors. Tryon (1884: 262) synonymised it with *Eucithara reticulata* (Reeve, 1846), a species which it does not resemble in the slightest. Although *peraffinis* was described as a mere colour variety of *Eucithara cinnamomea* (Hinds, 1843), there appears to be no relationship with that species. A syntype of *cinnamomea* (Figs 152–153, see Appendix) differs significantly from the syntypes of *peraffinis* and the holotype of *richardi* in being covered in well-developed spiral threads (represented in the present taxon only by inconspicuous, shallow scratches), in its narrower aperture and strongly produced siphonal canal, and in possessing a series of minute plicules along the sutural border.

Perhaps the species most closely related to *richardi* is *Citharomangelia planilabroides* (Tryon, 1884) [see Appendix], which differs in its distinctly cyrtoconoid spire, more narrowly conical base, narrower aperture and more markedly discontinuous ribs. Also comparable is *C. boakei* (G. & H. Nevill, 1869) from Sri Lanka, which has a higher spire, fine, but distinct spiral striae, and 11–12, stronger, closer axial ribs (which lack a peripheral angle). *C. pellucida* (Reeve, 1846), is also similar to *richardi*, but measures only 4,8 mm in length, has much less convex whorls, with the periphery near the base on spire whorls, and axial ribs that are continuous.

The present species is referred to *Citharomangelia* solely on account of its general resemblance to *C. africana*. Although the peripheral thread of Durban Bay examples is suggestive of the genus *Leiocithara*, *richardi* differs from members of that genus in its well-developed apertural denticles.

Papillocithara gen. n.

Type species: *Papillocithara hebes* sp. n.

Diagnosis: Shell ovate-fusiform with convex whorls, relatively thin-shelled, prelabral varix moderately thin, interior of inner and outer lips without distinct denticles, inner lip with a thin callus; siphonal canal not terminally notched; sculpture of weak, close axial ribs, crossed by very low, dense spiral threads, no microsculpture. Protoconch large, paucispiral (of about 1,5 whorls) and papilliform, sometimes subcylindrical, smooth except for a few weak orthocline axial riblets near termination.

Notes: This genus differs from *Eucithara* in its smooth peristome (other than traces of a few obsolete pustules), rather thin varix, and weak, dense ribbing. The protoconch (Figs 96, 98) is similar to that found in some of the Australian species referred to *Antiguraleus* Powell, 1942 (? = *Paraguraleus* Powell, 1944), but the respective type species differ markedly in teleoconch characters. Mere development of a paucispiral protoconch is now generally believed to be highly adaptive, not necessarily indicative of a common ancestry.

Only two, rather similar, species are known, both inhabiting the outer continental shelf/upper slope of south-eastern Africa, one off Natal, the other off western Transkei. No dichotomous key is offered, as comparison of their respective diagnoses will be a practical substitute.

Etymology: *papilla* (a nipple) + *cithara* (a harp), Latin.

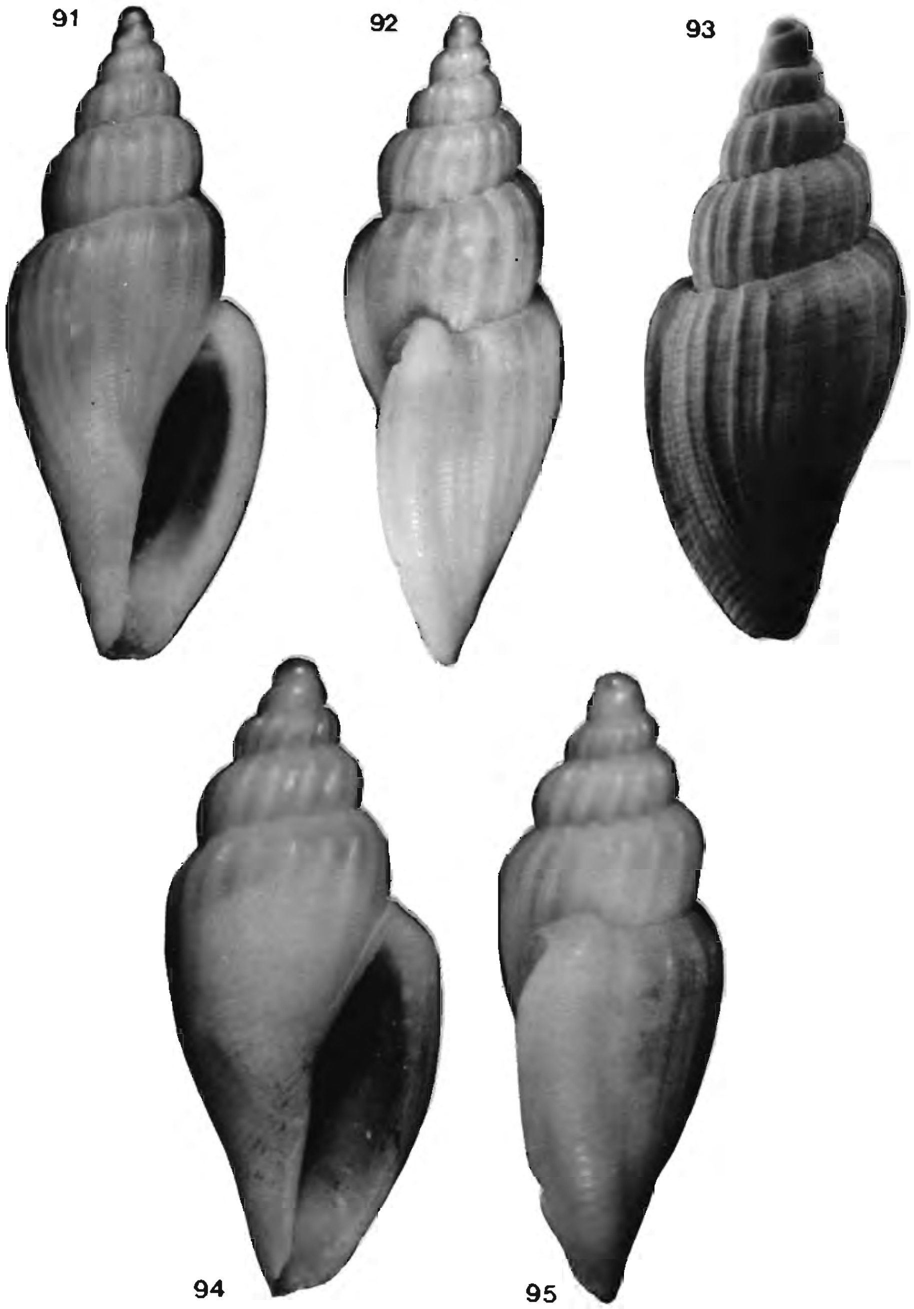
Papillocithara hebes sp. n.

Figs 91–93, 96–97

Diagnosis: Shell with relatively high spire (a/l 0,49–0,52, b/l 0,37-0,43), greatest width median, whorls without trace of shoulder and at suture not adpressed to previous whorl; axial ribs continuing onto upper part of rostrum, feeble on first whorl, 15–21 on later whorls; spiral threads 18–24 on penultimate whorl; pale buff to pale brownish-orange, protoconch brownish-orange; protoconch subcylindrical, breadth 0,85–0,98 mm, b/h 0,97–1,08. Attains 13,5 mm.

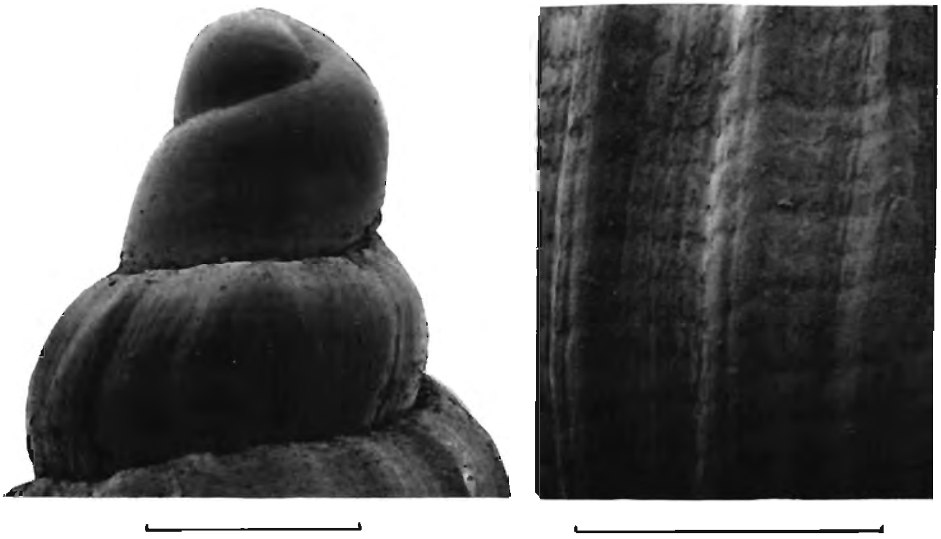
Description: Shell ovate-fusiform (b/l 0,37–0,43, a/l 0,49–0,52), greatest width median, with a moderately produced, strongly tapering base and blunt, more or less orthoconoid spire; teleoconch whorls about 4,5 in number; suture fairly shallow, rendered slightly undulating by rib terminations; whorl profile convex with periphery situated at or just above midwhorl, profile strongly convex above periphery, but not forming a distinct shoulder; no subsutural ridge; siphonal canal moderately short, slightly oblique, tapering and wide, indistinctly differentiated from aperture, its termination truncate, not indented; left side of base slightly concave, no fasciole. Aperture fairly wide, rather straight and narrowly lanceolate, with greatest width at or just above median, tapering posteriorly, outer lip not effuse anteriorly. Inner lip gently curved along its length, labial callus not thick, but with well-defined adnate outer margin; smooth except for faint traces of denticles towards base of columella. Outer lip preceded by a moderately weak varix; edge of lip thin, barely incurved, internally smooth, except for traces of a vestigial tubercle just anterior to anal sinus; lip gently and evenly convex in side-view, anal sinus slightly below suture, shallowly, openly and asymmetrically U-shaped; stromboid notch absent.

Surface glossy, sculptured by low and somewhat irregular axial ribs, becoming obsolete on upper part of rostrum and weak on back of body whorl, not continuous from whorl to whorl, crossed by close, barely raised spiral threads. Axial ribs somewhat narrower than their intervals, which are gently concave, ribs in t/s roundedly angular but somewhat asymmetrical, their leading face being



Figs 91–95. *Papillocithara hebes* and *P. semiplicata* spp. n. **91–93**, *P. hebes*: **91–92**, holotype NMSA C6724/T240, 13,5 × 5,0 mm; **93**, SEM (dorsal view) of paratype C7169/T273, 8,6 × 3,7 mm. **94–95**, *P. semiplicata*: holotype NMSA D1333/T277, 8,1 × 3,6 mm.

more concave than their trailing one; orientation opisthocline, somewhat sinuous, strongly protractively curved on shoulder slope, extending from suture to suture; ribs initially weak and irregular, thereafter 15–21 per whorl. Spiral threads (Fig. 97) very low, flattened and close-set, somewhat undulating, initially feeble, penultimate whorl with 18–24 threads, obsolete below suture, becoming stronger on base and forming distinctly raised lirae on rostrum.


96 97

Figs 96-99. *Papillocithara hebes* sp. n.: SEM of paratype C7169/T273; **96**, protoconch, bar = 500 μ; **97**, sculpture, bar = 750 μ.

Slightly translucent, colour uniform pale buff to very light brownish-orange, aperture paler, protoconch light brownish-orange.

Protoconch (Fig. 96) bluntly papillose and subcylindrical, of about 1,5 whorls, 1st half-whorl strongly tilted; smooth except for a few weak, orthocline axial riblets near termination; breadth 0,85–0,98 mm, height 0,83–0,95 mm (b/h 0,97–1,08).

Dimensions: 13,5 × 5,0 mm (holotype); 8,6 × 3,7 mm (smallest paratype).

Distribution: Known only from the upper continental slope off western Transkei, in about 250–410 m.

Type material: Holotype NMSA C6724/T240, off Qora River (32°33,6'S: 28°48,8'E), 300 m, coarse sand, some broken shell. Paratype 1, E7760/T241, same data; paratype 2, NMSA C4915/T242, off Mendu Point, 250–260 m, coarse sand; paratype 3, NMSA C7169/T273, off Rame Head, 410–430 m, stones, some sand. All NMDP.

Etymology: *hebes* = blunt, Latin.

Papillocithara semiplicata sp. n.

Figs 94–95, 98–99

Diagnosis: Shell with relatively low spire (a/l 0,59–0,61, b/l 0,44-0,46), greatest width posterior to median, whorls with a weak, rounded shoulder, at suture distinctly adpressed to previous whorl; axial ribs obsolete at middle of body whorl, distinctly developed on first whorl, 16 on later whorls; spiral threads approximately 12 on penultimate whorl; pale buff, protoconch bluntly conical, breadth 0,80–0,90 mm, b/h 1,20–1,27. Attains 8,1 mm.

Description: Shell ovate-fusiform (b/l 0,44–0,46, a/l 0,59–0,61), greatest width posterior to median, with a moderately produced, strongly tapering base and blunt, rather low and more or less orthoconoid spire; teleoconch whorls about 3,6 in number; suture shallow, rendered slightly undulating by rib terminations; whorl profile convex with slight, rounded shoulder situated at about 0,3 whorl below suture; no subsutural ridge, but subsutural region slightly adpressed against preceding whorl; siphonal canal moderately short, slightly oblique, tapering and wide, indistinctly differentiated from aperture, its termination truncate, not indented; left side of base slightly concave, fasciole slight. Aperture fairly wide, rather straight and narrowly lanceolate, with greatest width at or just above median, scarcely tapering posteriorly, outer lip not effuse anteriorly. Inner lip very gently curved along its length, labial callus not thick, but with well-defined adnate outer margin; smooth except for a few feeble pustules on paries. Outer lip preceded by a moderately weak varix; edge of lip thin, barely incurved, internally smooth, except for traces of a few vestigial tubercles just anterior to anal sinus; lip gently and evenly convex in side-view, anal sinus slightly below suture, shallowly, openly and asymmetrically U-shaped; stromboid notch absent.

Surface glossy, sculptured by low and somewhat irregular axial ribs, becoming obsolete at mid body whorl and weak on back of body whorl, not continuous from whorl to whorl, crossed by close, barely raised spiral threads, which may be very feeble. Axial ribs somewhat narrower than their intervals, which are gently concave, ribs in t/s roundedly angular but slightly asymmetrical, their leading face being somewhat more concave than their trailing one; orientation opisthocline, somewhat sinuous, strongly protractively curved on shoulder slope, extending from suture to suture; ribs 15–16 on first whorl, thereafter 16 per whorl. Spiral threads (Fig. 99) very low, flattened and close-set, somewhat undulating, developing on 2nd whorl, penultimate whorl with approximately 12 threads (but very difficult to count), becoming somewhat stronger on base and forming distinctly raised lirae on rostrum.

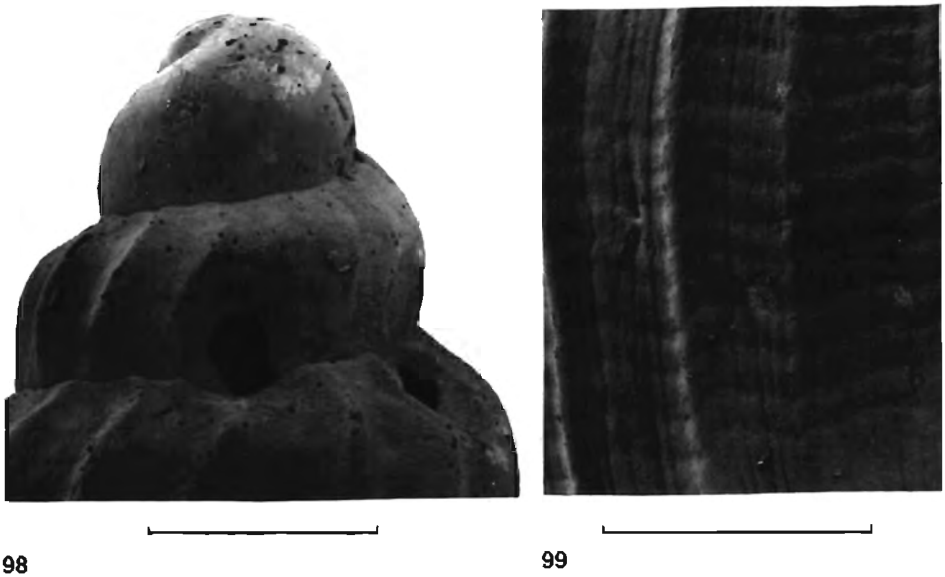
Colour uniform pale buff to yellowish-white, protoconch pale.

Protoconch (Fig. 98) bluntly conical, of about 1,5 whorls, 1st half-whorl strongly tilted; smooth except for a few weak, orthocline axial riblets near termination; breadth 0,80–0,90 mm, height 0,59–0,61 mm (b/h 1,20–1,27).

Dimensions: 8,1 × 3,6 mm (holotype); 8,5 × 3,9 mm (paratype).

Distribution: Vicinity of shelf break off Natal, just south of Durban, in 300–305 m (empty shells only).

Type material: Holotype NMSA D1333/T277, off Amanzimtoti (30°04,7'S:



Figs 98–99. *Papillocithara semiplicata* sp.n: SEM of paratype E8277/T278; **98**, protoconch, bar = 500 μ; **99**, sculpture, bar = 750 μ.

31°03,3′E), 300–305 m, medium sand, NMDP. Paratype NMSA E8277/T278, same data.

Notes: Although only two shells of this species are available, they differ widely from the much more southern *P. hebes* in shape, sculpture and protoconch characters (compare diagnoses).

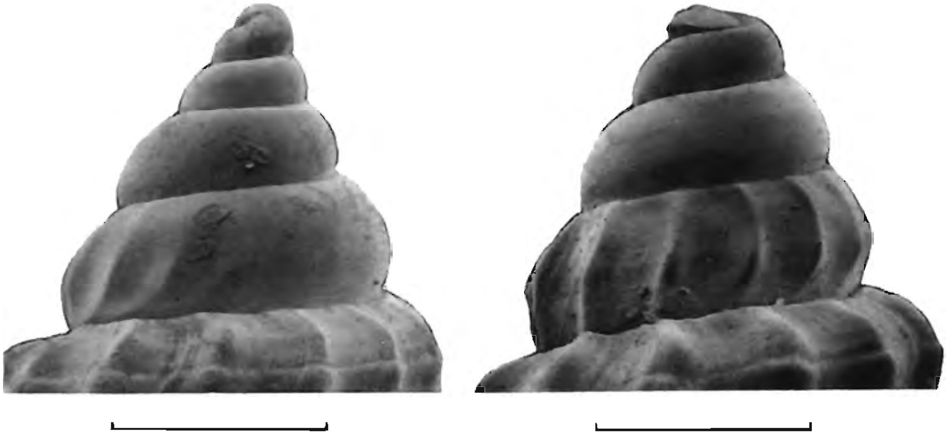
Etymology: *semi* (half) + *plicatus* (with folds), Latin.

Leiocithara Hedley, 1922

Leiocithara Hedley, 1922: 268 (as subgenus of *Eucithara*). Type species (o.d.) *Mangelia infulata* Hedley, 1909.

Diagnosis: Shell small to moderately small (3,5–11 mm), typically with few teleoconch whorls relative to protoconch, shape biconical to somewhat fusiform; surface glossy to slightly iridescent, with strong axial ribs, crossed at the shoulder by a spiral cord (rarely obsolete) which forms a series of small nodules or prickles; other spiral sculpture generally feeble or restricted to base of body whorl; columella usually extremely finely rugose (microshagreened), with a parietal pad or tubercle next to posterior angle of aperture, outer lip typically with a denticle or nodule just anterior to anal sinus. Protoconch large (sometimes disproportionately so), conical, a sinusigera, with first whorl almost always discarded from 1st teleoconch whorl stage on, smooth, except for last whorl which bears axial riblets (sometimes commencing on penultimate protoconch whorl), which may project as peripheral nodules. Radula unknown.

Notes: Powell (1966: 110) followed Hedley in treating *Leiocithara* as a subgenus of *Eucithara*, distinguished by its shoulder ridge and single opposing denticle on each lip. However, in view of the apparently polyphyletic nature of the *Eucithara* of authors (q.v.), it appears advisable to treat *Leiocithara* as a discrete genus, even though the radula is still unknown. Certainly it is a relatively characteristic and rather uniform group, distinguished *inter alia* by the disproportionately few teleoconch whorls, some species having a maximum of 3,0 teleoconch whorls against a [retained] protoconch of 3,5–4,0 whorls. The protoconch itself is distinctive, being large and orthoconoid to cyrtoconoid, with a somewhat swollen last whorl, which bears oblique axial ribs; the tip is decollated, the first whorl of the protoconch being lost at the first teleoconch whorl stage (Fig. 101), and plugged with shell matter, leaving a flattened or tilted, rather chalky base. Among the hundreds of examples seen, few individuals retain the first whorl, which is small and strongly tilted (Fig. 100). (In the following descriptions protoconch measurements are based routinely on specimens lacking this whorl.) A polygyrate sinusigera such as that of *Leiocithara* is presumably indicative of long planktotrophic development, which would suggest that most members of the genus will prove to be widely distributed across the Indo-West Pacific.



100 **101**

Figs 100–101. Typical protoconch of *Leiocithara*, showing natural decollation of apex: **100**, protoconch of *L. translucens* (Barnard, 1958), with 1st whorl retained, NMSA E1258, off Durban, 80–85 m, bar = 640 μ; **101**, protoconch from same sample showing loss of 1st whorl; bar = 500 μ.

Although possession of a parietal and a posterior labral denticle is normal for each of the southern African species here discussed (with the possible exception of *L. perlucidula*), there is much intraspecific variation in this regard, and not infrequently, even apparently adult individuals may lack these features, or conversely have one or more additional denticles on the outer lip.

Numerous samples of some of the South African species have been dredged, yet none appear to retain soft parts.

Extralimitally, few species of *Leiocithara* are known. Other than the type species, *Mangelia infulata* Hedley, 1909, of Queensland, typical members are *Mangilia apollinea* Melvill, 1904, *Mangelia macrocephala* Thiele, 1925, and *M. musae* Thiele, 1925, all from the tropical Indian Ocean, and the temperate water *M. flavescens* Angas, 1877, of New South Wales. [Although *flavescens* was referred to the genus *Guraleus* by Hedley (1922: 315, pl. 52, fig. 144), Laseron (1954: 30, pl. 7, fig. 147) and Powell (1966: 104), two syntypes (BMNH 77.5.12.22) that I have examined display all the characters of *Leiocithara*.] Of previously described South African mangeliines, only one, *Mangelia translucens* Barnard, 1958, proves to belong to *Leiocithara*.

In addition there are a number of species that can be regarded as 'unconfirmed' *Leiocithara*. Shuto (1970) referred here the Indonesian *Mangilia butonensis* Schepman, 1913, which may indeed be an aberrant *Leiocithara*, although its narrow shape could indicate that Schepman was closer in ascribing it to the genus *Mangelia* Risso, 1826; Kuroda & Oyama (1971) transferred *butonensis* to *Cytharopsis*. Another atypical species referred tentatively to *Leiocithara* is the South African *L. porcellanea* sp. n. (q.v), which retains a very slight peripheral angle to the ribs, but has lost the nodules and the connecting keel; the apertural denticles and large protoconch are typical of *Leiocithara*, rather than *Citharomangelia*, which it in some respects resembles. As discussed below, the Japanese *Pleurotoma (Mangelia) lischkei* Smith, 1882 (Figs 190–191) appears to provide a morphological link allying *porcellanea* to *Leiocithara*. *Pleurotoma (Mangilia) opalina* E. A. Smith, 1882 (Fig. 192), has distinct spiral lirae overall, but otherwise agrees with *Leiocithara*. *Mangelia angulata* Reeve, 1846, from the Philippines, is another problem species, resembling *Leiocithara*, but with a somewhat different protoconch (see Appendix), although again, *L. macrocephala* is to some extent annectent. Finally, another member of the genus *Leiocithara* may be *Mangelia nana* Reeve, 1846, if judged from the type figure; however, the supposed type specimen (see Appendix) is a *Eucithara*, and the species thus cannot be identified with certainty. Notes and figures of the types of most of these extralimital species are given in the Appendix to this paper.

Curiously, the Japanese *Drillia longispira* E. A. Smith, 1879, has been referred to *Leiocithara* by several Japanese workers; the holotype of *longispira* (BMNH 1878.11.7.6) is clavine, possibly genus *Tylotiella* (Fig. 193). However, the species so identified by Habe (1964: pl. 39, fig. 17) resembles neither *longispira* nor indeed any member of the genus *Leiocithara*. A different species again has recently been so recorded by Fukuda *et al.* (1990: pl. 4, figs 7, 8, plate caption), although this is presumably a *laps.cal.*, as in the text (p. 11) the same species is cited as genus *Rubellatoma* Bartsch & Rehder, 1939. The specimens figured by the latter authors appear to represent a species of *Citharomangelia*, and certainly are not *longispira*. Nevertheless, Fukuda *et al.* (*loc. cit.*) do illustrate an undoubted species of *Leiocithara* in pl. 4, fig. 6, although this is incorrectly identified as *Mangelia deshayesii* Dunker, 1860. I have not yet seen type material of *deshayesii*, but Dunker's figure of that (1861: pl. 3, fig. 3) shows a very different species, markedly fusiform in shape, with well-developed spiral sculpture.

The South African species of *Leiocithara* have proved somewhat difficult to resolve, because of the variability of some, and the large samples available of most. I have compared them with the types of all probable species of the genus (see Appendix), other than the doubtful *butonensis*. Six species are now known to occur in south-eastern Africa. Of these, *L. musae* (Thiele, 1925) is an East African taxon, with an outlying population in Durban Bay. The remainder appear to be endemic, with a distribution from Zululand at least as far south as Transkei. Another shallow-water species, *L. costellarioides* sp. n., also occurs in Durban Bay, with a slightly different form along the open coast down to 50 m. It is replaced in deeper water (40–150 m) by *L. perlucidula*, and the two are sympatric in shallower water without any sign of intergrading. The latter is occasionally sympatric in deeper water with a fourth shelf species, *L. translucens* (Barnard, 1958), which inhabits depths of 50–120 m; however, *translucens* generally appears to prefer muddier substrata. The aberrant *L. porcellanea* sp. n. also occurs on sand and rubble on the outer continental shelf in 80–160 m. Finally, on the outer shelf/upper slope in 160–350 m I have dredged perhaps the most distinctive of all these species, which I am naming *L. zamula*.

Key to species of *Leiocithara* in southern Africa

1 Spiral threads covering entire surface anterior to peripheral keel 2

– Spiral threads restricted to rostrum 4

2 Shape short-biconic with low spire (a/l 0,53–0,59) and wide aperture, whorls angular; outer lip markedly indented at base of siphonal canal, varix high; protoconch with 25–30 axial riblets .... **zamula**

– Shape fusiform to biconic-fusiform with high spire (a/l 0,41–0,53) and narrow aperture, whorls more rounded; outer lip weakly or not indented towards base, varix not high; protoconch with 7–12 axial riblets 3

3 Fusiform, siphonal canal distinctly curved to right; protoconch small (breadth 0,73–0,78 mm) .... **musae**

– Biconic-fusiform, siphonal canal not distinctly curved to right; protoconch larger (breadth 0,80–0,98 mm) .... **translucens**

4 Peripheral cord absent; large (up to 11 mm length) and porcellaneous; protoconch axially ribbed from penultimate whorl, ribs numbering 23–30 on last whorl .... **porcellanea**

– Peripheral cord present; small (up to 6 mm) and translucent; protoconch with axial ribs only on last whorl, ribs numbering 8–14 5

5 Shell fusiform and relatively narrow (b/l 0,38–0,46); last whorl of protoconch evenly convex, bearing axials which are initially strongest medially; littoral to 50 m .... **costellarioides**

– Shell biconical, broader (b/l 0,45–0,51); last whorl of protoconch with a rounded basal angle and axial riblets that begin as short suprasutural plicules; inhabits 40–150 m .... **perlucidula**

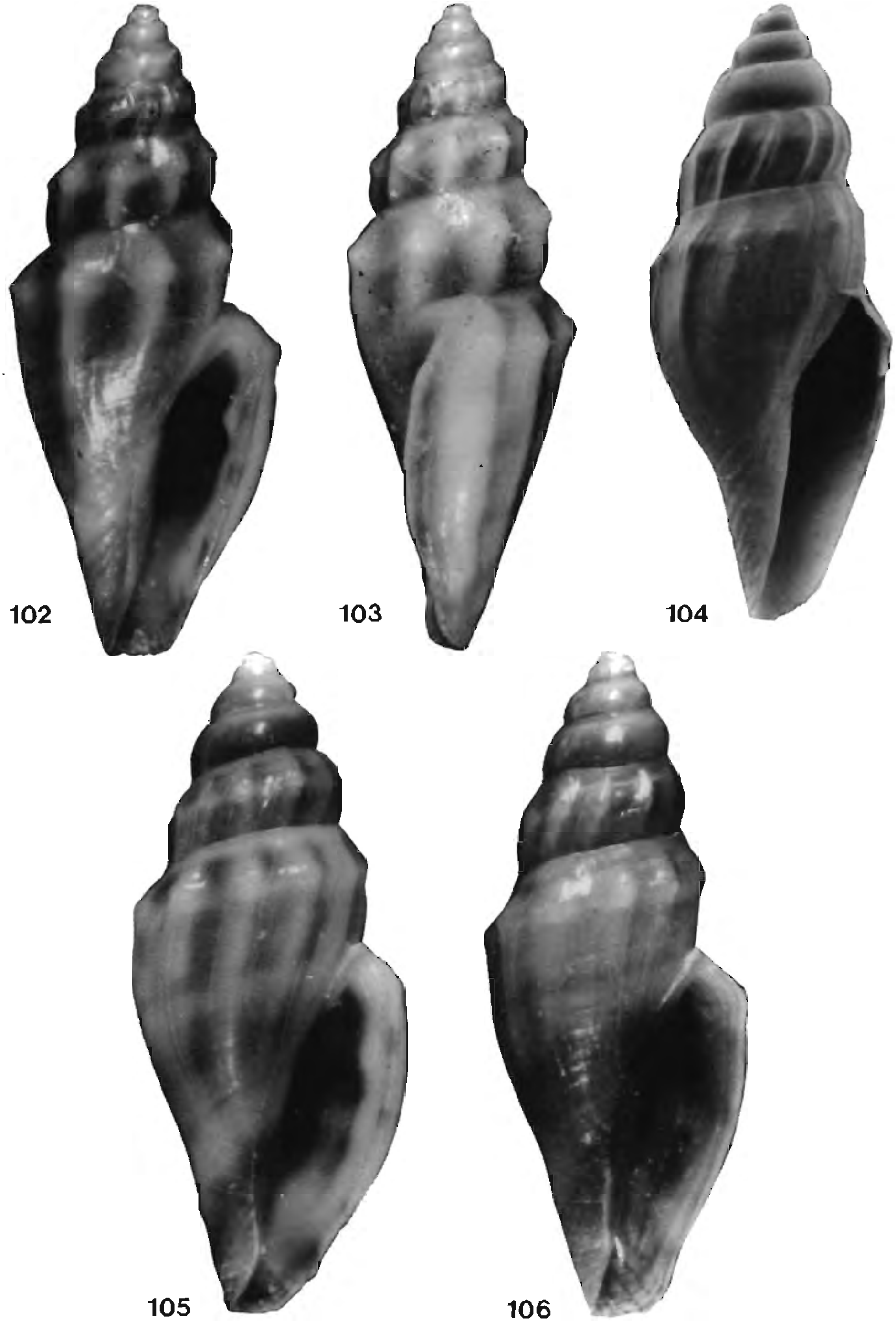
Leiocithara costellarioides sp. n.

Figs 102–107

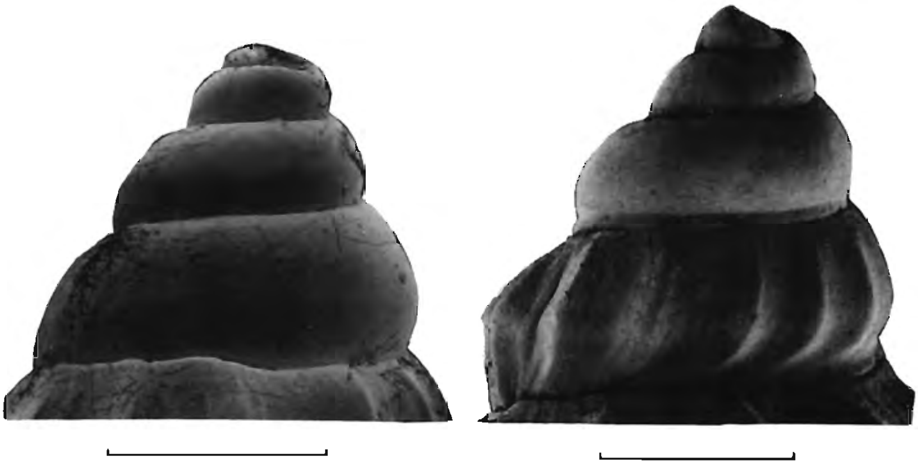
Diagnosis: Shell rather fusiform, b/l 0,38–0,46, a/l 0,44–0,53, with moderately sharp apex, left side of base not strongly concave; usually translucent, whorls typically with angular, sloping shoulder, bearing a strong to moderately weak spiral ridge, which forms a series of rather conspicuous, sharply angular tubercles, whorl profile above periphery flattened to slightly concave; outer lip not distinctly pinched-in anteriorly, its interior with a single low but fairly broad nodule below anal sinus; parietal pad weak, sometimes forming a nodule; prelabral varix rather weak to moderately strong; about 2,7 teleoconch whorls. Axial ribs 11–12 on penultimate whorl, 8–13 on body whorl; no spiral lirae other than 5–10 threads on rostrum. Protoconch narrowly conical, of nearly 4 whorls [+ 1 decollated], base of 1st one flattened, brephic axials 8–13 in number; breadth 0,93–1,01 mm. Light brown, columella and base of body whorl usually tinged with brownish-orange. Maximum length 6,0 mm.

Description: Shell somewhat fusiform (b/l 0,38–0,46, a/l 0,44–0,53) with a somewhat strongly produced, rather gradually tapering base and moderately sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls about 2,7 in number; suture shallow, not distinctly undulating; whorl profile typically angular (but sometimes scarcely so in open-coast form) with periphery situated at or just above midwhorl, flattened or slightly concave above periphery, moderately convex below; no subsutural ridge nor is sutural margin markedly adpressed against base of previous whorl; siphonal canal moderately short, slightly oblique, more or less parallel-sided and fairly wide, indistinctly differentiated from aperture, its termination obliquely truncate, not indented; left side of base slightly concave, fasciole weak or absent. Aperture narrow, rather straight except for posterior angle which curves to the right, outer lip barely effuse and not distinctly pinched-in anteriorly; columella long and only slightly convex, becoming concave at parietal/columella junction, paries relatively short; labial callus fairly thick, its outer margin very slightly free on columella, sometimes forming a feeble pseudo-umbilical groove; very finely rugose (microshagreened) with a weak nodule or pad at mid-parietal region; outer lip preceded by a fairly thick, varicoid rib (in open-coast form sometimes rather weak); edge of lip sharp, not incurved, internally smooth, except for a fairly broad, low tubercle anterior to anal sinus, and sometimes a second weaker one anterior to it; lip weakly convex in side-view, anal sinus occupying entire shoulder slope, rather shallow and asymmetrically U-shaped; stromboid notch slight.

Surface glossy, sculptured by strong axial ribs (in open-coast form sometimes weak), which are not regularly continuous from whorl to whorl, and are crossed at periphery by a low spiral ridge, which forms on the ribs a conspicuous angle of angular nodules or obtuse prickles (sometimes weak in open-coast form); other spiral sculpture absent, except for 5–10 weak and sometimes ill-defined threads on rostrum; growth lines distinct, particularly below suture. Axial ribs much narrower than / subequal to their intervals, which are gently concave, their crests in t/s roundedly angular, their slopes steep and typically somewhat concave,



Figs 102–106. *Leiocithara costellarioides* sp. n.: **102–103**, holotype, NMSA A2144/T243, 5,3 × 2,3 mm; **104–106**: paratypes of open-coast form, NMSA B5459/T260, **104**, SEM of juvenile, 3,8 × 1,5 mm; **105**, 3,9 × 1,8 mm; **106**, 4,7 × 1,9 mm.



107 **108**

Figs 107–108. *Leiocithara costellarioides* sp. n. and *L. musae* (Thiele, 1925), SEM of protoconch. **107**, *L. costellarioides*, paratype, NMSA B5459, bar = 380 μ. **108**, *L. musae*, NMSA E1123, bar = 300 μ.

particularly the leading face; orientation opisthocline, below suture weak and only slightly protractively curved, extending from suture to suture, on body whorl continuing onto upper rostrum or only to mid-aperture level; typically 9–10 axial ribs on 1st teleoconch whorl and 8–9 on later ones (9–12 and 10–13 respectively in open-coast form).

Light brown, with paler ribs and lip varix, inner lip light brown tinged with orange towards base; body whorl sometimes with faint spiral bands of yellow-brown; open-coast form slightly translucent light brown with base of body whorl and columella tinged with darker orange-brown, also with dorsal marks of that colour.

Protoconch conical, of about 4 convex whorls [+ 1 decollated], last one rather inflated and evenly convex, remnant of initial whorl depressed and flattened; smooth, except for 8–13 arcuate, strongly opisthocline axial ribs on last half-whorl, beginning as weak plicules that are strongest at midwhorl; breadth 0,93–1,01 mm, height 0,88–1,15 mm (b/h 0,95–1,14).

Dimensions: 5,3 × 2,3 mm (holotype); 6,0 × 2,5 mm, 5,2 × 2,4 mm (largest and smallest adult paratypes).

Distribution: Northern Zululand to eastern Transkei, littoral to 50 m.

Type material: Holotype NMSA A2144/T243, Durban, H. C. Burnup. Paratypes: (typical form): Durban Bay, shallow dredgings (NMSA B2247/T244, 10, NMSA E7761/T245, 1, B. J. Young. (Open-coast form): ZULULAND: N. of Leven Point, 32 m, coral rubble (NMSA D146/T259: A. Connell); off St Lucia Lighthouse, 50 m, NMSA A6163/T255, 9, ex CSIR Water Res. NATAL: off Durban Bluff, 20-22 m, sand, NMSA B5459/T260, 27, R. K., R. Fregona; do, 18–22 m, NMSA D1651/T256, 1, Mrs N. Watt; Port Edward, beach-drift, NMSA

A3857/T257, 1, Mrs R. Cock. TRANSKEI: Mzamba, beach-drift, B4701/T258, 1, R. K.

Notes: Two ecological forms of this species appear to be present: namely the typical one from Durban Bay (Figs 102–103), and an open-coast form (Figs 104–106), which is evidently abundant in 18–22 m but only occasionally washes up on the beach. Although extreme specimens of the latter form look very different, others differ little from the typical morph, and I can find no justification for treating them as full species. Differences between the two forms may be summarised thus:

(a) Typical (Durban Bay) form: Larger (up to 6,0 mm), thicker-shelled, more biconical, with somewhat higher spire (a/l 0,44–0,46), whorls strongly angular with conspicuous peripheral nodules, sutural margin not adpressed against preceding whorl, prelabral varix thick; axial ribs strong, distinctly narrower than their intervals, and with concave slopes, 9–10 ribs on 1st teleoconch whorl, 8–9 on later ones; base of body whorl not darker than elsewhere.

(b) Open-coast form: Smaller (up to 4,6 mm), thinner-shelled and more translucent, spire tending to be lower (a/l 0,46–0,53), whorls often weakly angular to gently convex with scarcely any peripheral angulation, sutural margin slightly adpressed against preceding whorl;prelabral varix sometimes rather weak; axial ribs strong to feeble on later whorls, 9–12 on 1st teleoconch whorl, 10–13 on later whorls, often equal to their intervals and with slopes not concave; base of body whorl darker than elsewhere.

All paratypes of the typical form (other than one juvenile) are worn or faded, having been sorted during the 1970's from a reclamation dump. The only really fresh specimen (the holotype) was collected by Burnup, probably at the turn of the present century; although merely labelled 'Durban', Burnup's main collecting area there (before construction of the railway line) was situated on the inside of Durban Bluff, near the channel from which the above reclamation material was originally suction-dredged. It is thus probable that all known specimens of the typical form inhabited the same small area in Durban Bay.

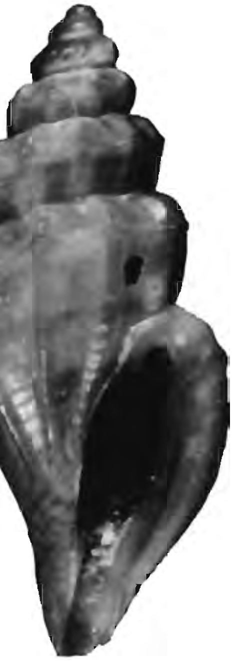
Etymology: *costellarioides* = resembling members of the family Costellariidae, Latin.

Leiocithara musae (Thiele, 1925)

Figs 108–114

Mangelia musae Thiele, 1925: 212 (246), pl. 27 (39), fig. 1. Type locality: 5°55,8'S:39°1,2'E, 50 m.

Diagnosis: Shell fusiform, b/l 0,35–0,46, a/l 0,41–0,53, with moderately sharp apex and relatively well-differentiated siphonal canal, left side of base strongly concave; slightly translucent, whorls with sloping shoulder, bearing a spiral ridge, which forms a series of small, rounded tubercles, whorl profile above periphery convex, subsutural margin usually slightly adpressed to previous whorl; outer lip distinctly pinched-in anteriorly, interior as a rule with a weak to strong nodule below anal sinus (sometimes with a few additional denticles); parietal pad present, usually with a weak to strong nodule; prelabral varix moderately strong; about 4 teleoconch whorls. Axial ribs 8–12 per whorl, whorls anterior to



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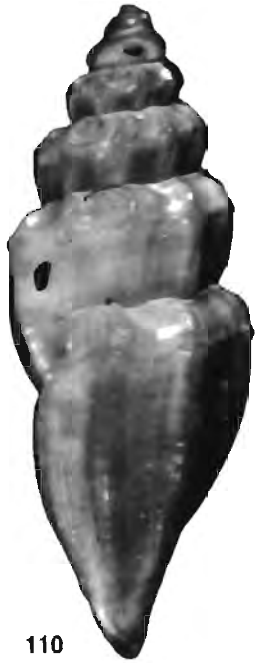

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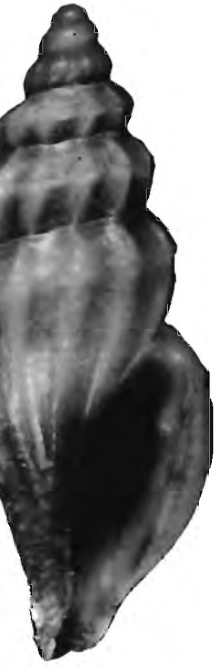

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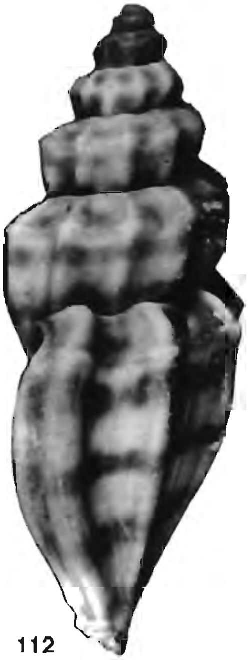

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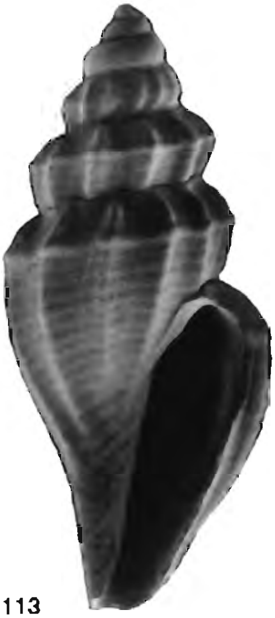

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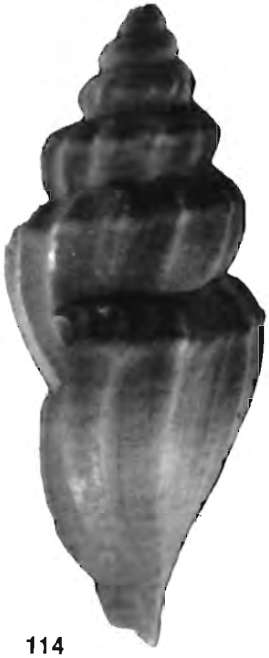

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Figs 109–114. *Leiocithara musae* (Thiele, 1925). **109–110**, lectotype of *Mangelia musae*, ZMHB, 4,7 × 2,0 mm. **111–114**, Examples from Durban Bay, NMSA E1123: **111**, 4,8 × 2,0 mm; **112**, side view of banded example, 5,1 × 2,4 mm; **113–114**, SEM to show spiral sculpture, **113**, 3,9 × 1,9 mm, **114**, side-view, 4,3 × 2,0 mm.

peripheral ridge with weak spiral lirae, 20–25 on body whorl. Protoconch narrowly conical, of about 3,5 whorls [+ 1 decollated], base of 1st one strongly tilted, brephic axials 10–12, breadth 0,73–0,78 mm. Light to very light brown, rostrum and columella brownish-orange. Maximum length 6,3 mm.

Description: Shell fusiform (b/l 0,35–0,46, a/l 0,41–0,53) with a moderately produced, rather rapidly tapering base, curved somewhat to left, and a moderately sharp, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls about 4 in number; suture shallow, usually weakly undulating; whorl profile angular with periphery situated at or just above midwhorl, more or less weakly convex above periphery, more strongly so below; no subsutural ridge but sutural margin sometimes slightly adpressed against base of previous whorl; siphonal canal moderately short, distinctly oblique, more or less parallel-sided and moderately narrow, usually quite distinctly differentiated from aperture, its termination obliquely truncate, not indented; left side of base more or less strongly concave, fasciole absent. Aperture narrow, greatest width at about posterior third, rather straight except for posterior angle which curves somewhat to the right, outer lip neither effuse nor pinched-in anteriorly; columella long and only slightly convex, curving quite strongly at junction with paries, which is relatively short; labial callus fairly thick, its outer margin very slightly free on columella, faintly rugose with a parietal pad that may develop a weak to strong median nodule; outer lip preceded by a thick, varicoid rib; edge of lip sharp, not incurved, interior with a weak to strong tubercle just anterior to anal sinus, and occasionally a second one anterior to that, rarely absent or followed by a series of irregular denticles; lip weakly convex in side-view, anal sinus occupying entire shoulder slope, rather shallow and asymmetrically U-shaped; stromboid notch very shallow.

Surface slightly iridescent when fresh, sculptured by strong axial ribs, which are not regularly continuous from whorl to whorl, and are crossed at periphery by a low spiral ridge, which forms on the ribs an angle of small, blunt, compressed tubercles; whorls anterior to ridge covered by weak to faint spiral lirae; growth lines distinct, particularly strong behind outer lip. Axial ribs somewhat narrower than (rarely subequal to) their intervals, which are gently concave, their crests in t/s roundedly angular, their slopes fairly steep and equally concave; orientation moderately opisthocline, below suture only slightly protractively curved, extending from suture to suture, on body whorl continuing onto upper rostrum; 10–12 axial ribs per whorl (Natal), 8–10 (Mozambique and Tanzania). Spiral lirae strongest on rostrum, becoming progressively weaker towards shoulder cord, and visible mainly by their intervals, which show as barely inscribed furrows; when fully developed, these lirae number 20–25 on body whorl, but are sometimes reduced to scratches plus 5–7 threads on rostrum.

Protoconch conical, of about 3,5 convex whorls [+ 1 decollated], base of initial whorl strongly tilted; smooth, except for 10–12 arcuate, strongly opisthocline axial ribs on last half-whorl (7 in lectotype); breadth 0,73–0,78 mm, height 0,63–0,75 mm (b/h 1,03–1,16) in local material, 0,69 × 0,63 mm (b/h 1,1) in lectotype.

Colour light brown to brownish-white, with base of body whorl and columella callus tinged with brownish-orange; occasionally uniformly brown or body whorl sometimes with faint spiral bands or thin lines of brown.

Dimensions: 6,3 × 2,2 mm (largest Natal shell); 4,7 × 2,1 mm (largest Mozambique shell); 4,7 × 2,0 mm (syntypes from East Africa).

Distribution: East Africa and Mozambique, south to Durban Bay.

Regional locality data: NORTHERN MOZAMBIQUE: Nacala, harbour dredgings (NMSA G2996: F. Steiner). SOUTHERN MOZAMBIQUE: Benguerua Island, Bazaruto Archipelago, dredged in channel, ca. 12 m amongst *Thalassodendron* (NMSA G4469: R. K.). NATAL: Durban Bay, shallow dredgings (NMSA E1123, E7762: B. J. Young).

Type material: Two syntypes in ZMHB; figured syntype (Figs 109–110) here designated as lectotype, dimensions 4,7 × 2,0 mm.

Notes: NMSA material agrees well with Thiele's *musae*, described from the Zanzibar/Pemba Island area. Thiele's description of the axial sculpture as initially '*warzenfömigen*' is misleading, although indeed the ribs of the protoconch are initially shorter and more peripheral than those that follow. The lectotype differs from southern examples in having a slightly smaller protoconch which has fewer axial ribs (see description above), and the body whorl bears stronger spiral threads, but this is regarded as of geographical significance only. Compared with the Natal population, both the types and shells from Bazaruto Island are smaller and have slightly fewer axial ribs.

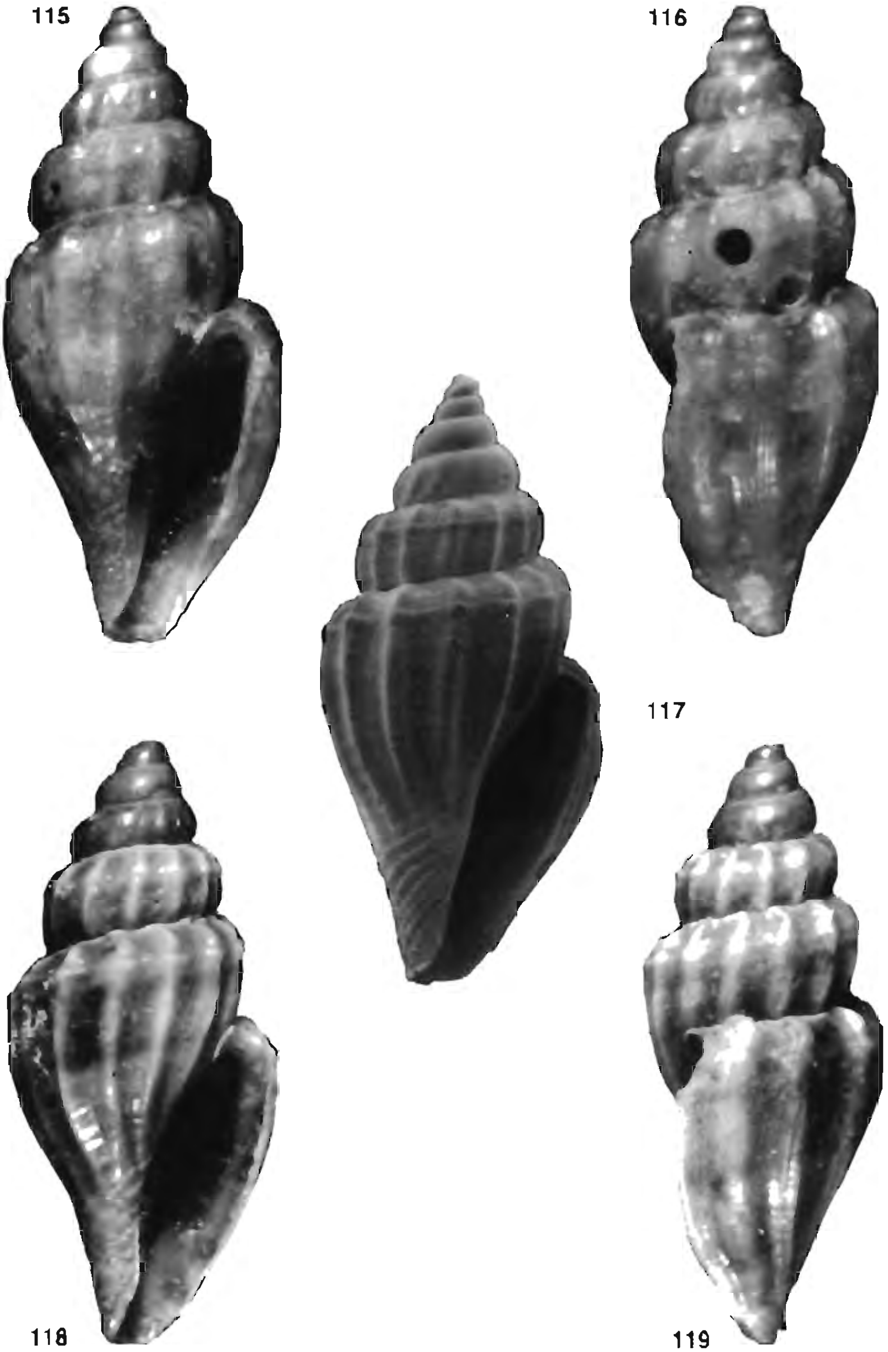
L. musae is very abundant in sand from Durban Bay dredgings, and several hundred specimens are available, enabling variation patterns to be gauged. Minor variation occurs in strength of spiral sculpture, development of apertural teeth and in coloration.

Leiocithara translucens (Barnard, 1958)

Figs 100–101, 115–119

Mangilia translucens Barnard, 1958: 155, fig. 27a; Giles & Gosliner, 1983: 33. Type locality: off Umhloti [= Mdloti] River, 40 fathoms [= 73 m].

Diagnosis: Shell rather biconical-fusiform, b/l 0,41–0,53, a/l 0,45–0,53, with relatively blunt apex, not translucent, whorls with sloping shoulder, bearing a weak spiral ridge, which forms a series of small, blunt tubercles, preceded above by a second, feeble angle formed by the convex shoulder slope; outer lip not distinctly pinched-in anteriorly, interior with a single feeble nodule below anal sinus (sometimes absent); parietal nodule weak; prelabral varix not much stronger than ribs; only 2,5 teleoconch whorls. Axial ribs 11–13 on penultimate whorl, 9–12 on body whorl, moderately strongly opisthocline; anterior to peripheral ridge whorls are covered by weak spiral lirae, with inconspicuous threads on rostrum. Protoconch fairly narrowly conical, of about 3,5 whorls [+ 1 decollated], base of 1st one flat and slightly tilted, smooth except for 7-10 brephic axials, breadth 0,80–0,98 mm. Light brown with paler ribs and darker transverse bands dorsally, columella brownish-orange. Maximum length 5,0 mm.



Figs 115–119. *Leiocithara translucens* (Barnard, 1958): **115–116**, lectotype of *Mangilia translucens*, SAMC A38041, 4,4 × 2,0 mm; **117**, SEM of juvenile, 3,8 × 1,8 mm, NMSA E1258, off Durban, 80–85 m; **118–119**, example from off Port Grosvenor, 60 m, NMSA C7755, 4,2 × 2,0 mm.

Description: Shell rather biconical-fusiform (b/l 0,41–0,53, a/l 0,45-0,53) with a moderately produced, rather rapidly tapering base and relatively blunt, slightly cyrtoconoid spire; teleoconch whorls about 2,5 in number; suture moderately shallow, not distinctly undulating; whorl profile rounded with periphery situated above midwhorl, forming a roundedly-sloping shoulder, below which whorl profile is convex; no subsutural ridge nor is sutural margin adpressed against base of previous whorl; siphonal canal moderately short, distinctly oblique, moderately narrow, widening slightly towards tip, weakly differentiated from aperture, its termination obliquely truncate, not indented; left side of base more or less strongly concave, fasciole absent. Aperture narrow, more or less parallel-sided, rather straight except for posterior angle which curves somewhat to the right, outer lip anteriorly not effuse, but distinctly pinched-in; columella moderately long and almost straight, only curving at siphonal canal and at junction with paries, which is relatively short; labial callus fairly thick, its outer margin very slightly free on columella, feebly rugose with a parietal pad that may develop a weak median nodule; outer lip preceded by a relatively weak varix, not much stronger than preceding ribs; edge of lip sharp, somewhat incurved, interior with a feeble tubercle just anterior to anal sinus; lip convex in side-view, anal sinus relatively narrow, but occupying entire shoulder slope, fairly shallow and asymmetrically U-shaped; stromboid notch very shallow.

Surface slightly iridescent when fresh, sculptured by strong axial ribs, which are sometimes more or less continuous on last two whorls; at shoulder and at periphery ribs bear a weak, double angle: anterior angle formed by low peripheral ridge and bears a series of feeble, compressed tubercles, whereas even weaker, more posterior bulge does not correspond to a ridge but is formed by profile of shoulder slope; peripheral ridge initially situated at or slightly above midwhorl; whorls anterior to ridges covered by weak spiral lirae; growth lines distinct, particularly strong behind outer lip. Axial ribs narrower than / subequal to their intervals, which are gently concave, their crests in t/s roundedly angular, their slopes steep, the leading face sometimes slightly concave; orientation rather strongly opisthocline, below suture only slightly protractively curved, extending from suture to suture, on body whorl continuing to upper rostrum; 11–13 axial ribs on penultimate whorl, decreasing to 9–12 on body whorl. Spiral lirae strongest on rostrum, elsewhere very weak and visible mainly by their intervals, which show as barely inscribed furrows.

Colour light brown with paler ribs and, generally, 4–6 slightly darker brown spiral bands, usually most distinct dorsally, columella tinged with brownish-orange.

Protoconch conical, of about 3,5 convex whorls [+1 decollated], base of initial whorl flattened and slightly tilted; 3rd whorl with periphery very slightly angular and situated below midwhorl; smooth, except for 7–10 arcuate, strongly opisthocline axial ribs on last half-whorl, beginning as a series of short, oblique, infraperipheral plicules; breadth 0,80–0,98 mm, height 0,75–0,88 mm (b/h 0,96–1,17).

Dimensions: 4,2 × 2,0 mm (holotype); 5,0 × 2,2 mm (largest specimen).

Distribution: Inner continental shelf from Western Transkei to Tugela River, 50–120 m, on mud and sand (empty shells).

Type material: Lectotype SAMC A38041 here designated (Fig. 115–116), dimensions 4,4 × 2,0 mm; paralectotypes SAMC A8726, nine, and BMNH 1962319, two. [Although Giles & Gosliner (1983) reported 12 syntypes, only 10 are now present in SAMC, the 'missing' two obviously being those presented to BMNH in 1962.] One specimen from each of the two paralectotype sets is an example of *Leiocithara perlucidula* sp. n.

Locality data (unless otherwise stated NMSA: NMDP): TRANSKEI: off Nthlonyane R., 51 m, sandy mud, corals (C7343); off N'tafufu River, 50 m, mud, sand (C7387); off Port Grosvenor, 60 m, sand, broken shell (C7755, E7929); do, 80 m, worn calcareous nodules (C7311); off Mbotyi, 50 m, sand (C7796). NATAL: S. E. of Green Point, 100 m, fine sand and rubble (E5476); off Umlaas Canal, 75 m, muddy sand (S1198), do, 150 m, coarse sand, spatangoids, pebbles (S1179); off Durban, 100 m, very fine muddy sand, schizamminid forams (E6717); do, 110–120 m, coarse muddy sand (E5672); do, 80–90 m, grey sandy mud (D4443); do, 80–85 m, firm grey muddy sand (E1258); off Cooper Lighthouse, Durban, 88 m, firm grey muddy sand (D4414); off Tugela River, 65–80 fathoms [119–146 m] (SAMC A8755: *P. F.*).

Notes: In most features this species closely resembles *Leiocithara macrocephala* (Thiele, 1925) from off Tanzania. However, examination of four syntypes of the latter (Fig. 184) from the ZMHB collection reveals the protoconch to be strikingly different: in *translucens* the last whorl of the protoconch is rounded, with oblique riblets, whereas in *macrocephala* this whorl has a prominent submedial angle, bearing a series of oblique, angular nodules.

L. translucens also somewhat resembles *L. musae* in possessing distinct spiral striae, but the bulging shoulder slope produces a feeble double shoulder angle, and the shape is more biconical, lacking the markedly produced, curved base of *musae*. The base of the lost apical protoconch whorl is less tilted than in *L. musae*, and its remains are thus button like, rather than forming a subcircular flange. *L. translucens* may be difficult to separate from individuals of *L. perlucidula* (q.v.), although the two species are rarely sympatric, *translucens* apparently preferring a muddier substratum.

Specimens of *L. translucens* have been collected from beach drift at Mzamba, just south of the Mtamvuna River (in coll. J. P. Marais). Although not unlikely, the southernmost record for the species, 'off East London, 32 fathoms' (SAMC A8586), requires confirmation, as do all *Pieter Faure* records from that area.

Barnard's description and figure are inaccurate, and the presence of both shoulder lira and spiral threads was overlooked. Curiously, his figure and choice of specific name are perhaps more indicative of the species described here as *L. perlucidula*, but as there appear to be only two examples of the latter species among the syntypes and Barnard's other specimens of *translucens* (all more or less worn), I am selecting the lectotype accordingly.

Leiocithara perlucidula sp. n.

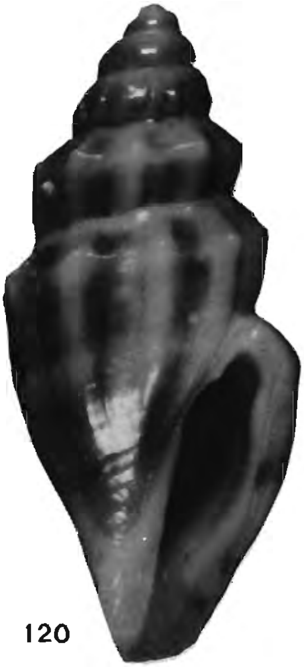
Figs 120–123

Mangilia translucens Barnard, 1958: 155 [partim].

Diagnosis: Shell biconical, b/l 0,45–0,51, a/l 0,46–0,54, with relatively blunt apex, translucent (particularly rib intervals), whorls with angular, sloping shoulder, bearing a strong to moderately weak spiral ridge, which forms a series of rather conspicuous, bluntly angular tubercles; whorl profile more or less convex above periphery; outer lip weakly pinched-in anteriorly, interior with a single feeble nodule below anal sinus; parietal region sometimes with a weak pad or nodule; prelabral varix only moderately strong; just under 3,0 teleoconch whorls. Axial ribs 11–12 on penultimate whorl, 9–10 on body whorl; faint spiral scratches sometimes visible, but no spiral threads other than 7–9 well-developed lirae on rostrum. Protoconch broadly conical, of nearly 3,5 whorls [+1 decollated], base of 1st one flat and slightly tilted, last with periphery basal and slightly angular, brephic axials 11–14, initially developing as short plicules on base of whorl; breadth 0,90–1,08 mm. Light yellowish- to orange-brown, ribs, rostrum and a transverse zone paler, base with a broad dark zone. Maximum length 5,0 mm.

Description: Shell biconical (b/l 0,45–0,51, a/l 0,46–0,54) with a moderately produced, rather rapidly tapering base and relatively blunt, orthoconoid to slightly cyrtoconoid spire; teleoconch whorls just under 3,0 in number; suture moderately shallow, not undulating; whorl profile angular with periphery forming a roundedly-sloping shoulder, below which whorl profile is flat to slightly convex; no subsutural ridge nor is sutural margin adpressed against base of previous whorl; siphonal canal moderately short, distinctly oblique, moderately narrow, widening slightly towards tip, weakly differentiated from aperture, its termination obliquely truncate, not indented; left side of base more or less strongly concave, fasciole absent. Aperture narrow, more or less parallel-sided, rather straight except for posterior angle which curves somewhat to the right, outer lip anteriorly not effuse, but very slightly pinched-in; columella moderately long and almost straight, only curving at siphonal canal and at junction with paries, which is relatively short; labial callus fairly thick, its outer margin very slightly free on columella, very finely but distinctly microshagreened, without a parietal pad or nodule; outer lip preceded by a moderately thick, varicoid rib; edge of lip sharp, slightly incurved, interior with a feeble tubercle just anterior to anal sinus; lip convex in side-view, anal sinus relatively narrow, but occupying entire shoulder slope, fairly shallow and asymmetrically U-shaped; stromboid notch shallow but distinct.

Surface slightly iridescent when fresh, sculptured by strong axial ribs, which are not regularly continuous; peripheral lira weak to relatively strong, forming a series of bluntly angular, compressed tubercles, on 1st whorl situated at or slightly above median, on 2nd slightly above midwhorl to 0,3 whorl below suture; rostrum with 7–9 distinct, slightly rounded lirae, rest of surface sometimes with faint spiral scratches, but without other spiral sculpture; growth lines distinct, particularly strong behind outer lip. Axial ribs narrower than / subequal to their intervals, which are gently concave (in places flattened), their crests in t/s



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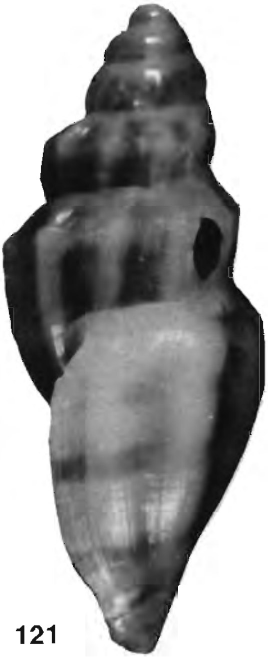

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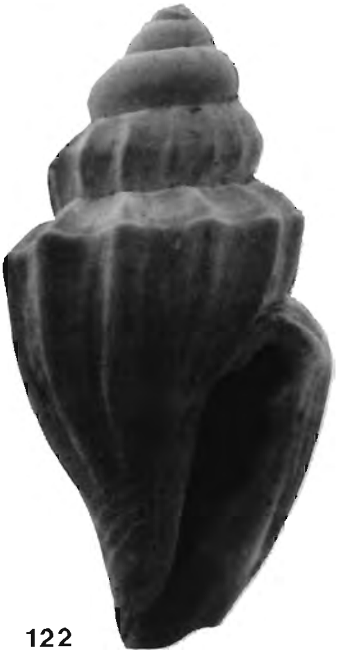

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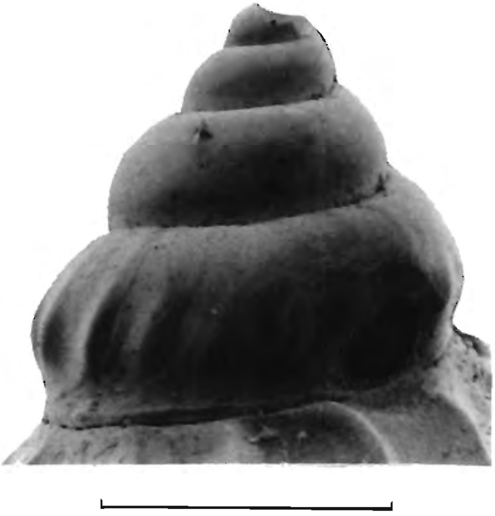

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Figs 120–123. *Leiocithara perlucidula*, sp. n.: **120–121**, holotype, NMSA E5436/T728, 5,0 × 2,3 mm; **122**, SEM of paratype, NMSA E5765/T404, off Gipsy Hill, 52 m, 3,4 × 1,7 mm; **123**, SEM of protoconch from same sample, bar = 500 μ.

roundedly angular, their slopes steep, the leading face sometimes slightly concave; orientation moderately opisthocline, rather straight, below suture only slightly protractively curved, extending from suture to suture, on body whorl usually continuing to upper rostrum, sometimes evanescing at mid-labial level; 11–12 axial ribs per whorl, decreasing to 9–10 on body whorl.

Colour light yellowish- to orange-brown, axial ribs, rostrum and a median band usually almost colourless, base of body whorl generally with a broad orange-brown zone; protoconch light to medium orange brown, columella medially tinged with orange-brown.

Protoconch cyrtoconoid, of nearly 3,5 whorls [+ 1 decollated], base of initial whorl flattened and slightly tilted; subsequent whorls convex, periphery of 3rd whorl becoming slightly angular and situated below midwhorl; smooth, except for 11–14 arcuate, strongly opisthocline axial ribs on last half-whorl, beginning as a series of short, oblique, inframedian plicules; breadth 0,90–1,08 mm, height 0,70–1,00 mm (b/h 1,07–1,29).

Dimensions: 5,0 × 2,3 mm (holotype).

Distribution: Continental shelf of northern Zululand to eastern Cape Province, 40–150 m (rarely deeper).

Type material (all NMSA: NMDP): Holotype E5436/T718, off Kosi Bay (or estuary), northern Zululand (26°54,7'S:32°55,1'E), 45 m, red algae, sponges. Paratypes: ZULULAND: same data as holotype (E7937/T433, 7); S. E. of Kosi Bay, 50 m, fine sand (E5358/T432, 15); do, coarse sand, shells (E5616/T268, 29); off Boteler Point, 70 m, coral rubble (E1575/T265, 9), off Gypsy Hill, 52 m, fine sand (E5765/T404, 19; do, 47–52 m, fine sand (E5656/T271, 16); off Hully Point, 40 m, fine sand (E5930/T254, 6); do, 60 m, shell-rubble (E5414/T253, 3); off Cape St Lucia, 76–80 m, coarse sand with mud (E5693/T266, 5); S.E. of Port Durnford, 152 m, mud, stones (E5646/T269, 3). NATAL: off Durban, 100 m, very fine muddy sand, schizamminid forams (E7938/T267, 3). TRANSKEI: off Mtamvuna R, 111 m, sponge (C7462/T251, 1); off Port Grosvenor, 82 m, worn calcareous nodules (C7400/T252, 4); off Ubombo, 60–62 m, coarse sand, oyster-shell conglomerate (C7337/T249, 1); do, 135–165 m, sponge-rubble (C7858/T248, 3); off Whale Rock, 150–165 m, coarse sand, solitary corals (C7795/T403, 1 juv.); do, 70–73 m, marine growths, calcareous debris (C7641/T272, C7164/T402, 2 juvs); off Sandy Point, 90 m, calcareous debris, coarse sand (C7646/T250, 1 juv.). EASTERN CAPE PROVINCE: off East London, 70 m, muddy sand, schizamminid forams (D267/T270, 2 juvs).

Notes: *L. perlucidula* is an abundant species, although no living examples have been observed. Curiously, most larger individuals show an immature lip, apertural denticles being best developed in shells of about 2 teleoconch whorls. The specimen selected as holotype bears four small dorsal perforations, but is one of the few fresh adults with fully developed apertural characters. Most individuals from Transkei are certainly juvenile, probably indicating recruitment from further north. Like *L. costellarioides*, this species varies much in shape, some examples being relatively broad and biconical, others being more distinctly fusiform. Both extremes occur in the same sample and I am unable to find grounds for separating them taxonomically. *L. perlucidula* is superficially very similar to *L. translucens*, and the syntypes of the latter (*q. v.*) include two specimens of it; however, in *perlucidula* the shoulder tubercles form a projecting angle, the peripheral cord and the spiral lirae on the rostrum are stronger, other spiral sculpture is absent, and the shell (particularly the intervals between the ribs) is characteristically translucent, the internal columellar axis being clearly visible from the exterior in fresh shells; the colour pattern is more distinctly blotched and the base of the body whorl bears a broad brown band, absent in *translucens*, and the shoulder always bears only a single distinct angle; as a rule shape is less fusiform and the axial ribs tend to be slightly more numerous. *L. perlucidula* is closest in appearance to *L. infulata* (Hedley, 1909) of Queensland; the holotype of that (Figs 185–186, AMS C27435) is much smaller than *perlucidula* (3,5 × 1,8 mm), with a proportionately smaller protoconch (breadth 0,85 mm); the peripheral keel is stronger and median on later whorls (instead of supramedian), and the axial ribs are much stronger below the suture and on the base (continuing to the basal spirals without weakening); the protoconch bears 9 axial ribs, instead of 11–14 as in *perlucidula*. Finally, *perlucidula* may be compared with *L. apollinea* (Melvill, 1904), a species recorded from the Persian Gulf, Red Sea and Indonesia; *apollinea*, however, has a more gradually tapering base and a smaller and more orthoconoid protoconch (breadth 0,75–0,90 mm, b/h 1,15–1,30). Furthermore, *apollinea* appears to be always colourless – certainly neither the BMNH syntypes (BMNH 1905.7.14.59-61) nor numerous topotypes examined show any trace of pigmentation, nor is this mentioned in any literature reference to the species.

Specimens of *L. perlucidula* have been collected from beach drift at Mzamba, just south of the Mtamvuna River (in coll. J. P. Marais).

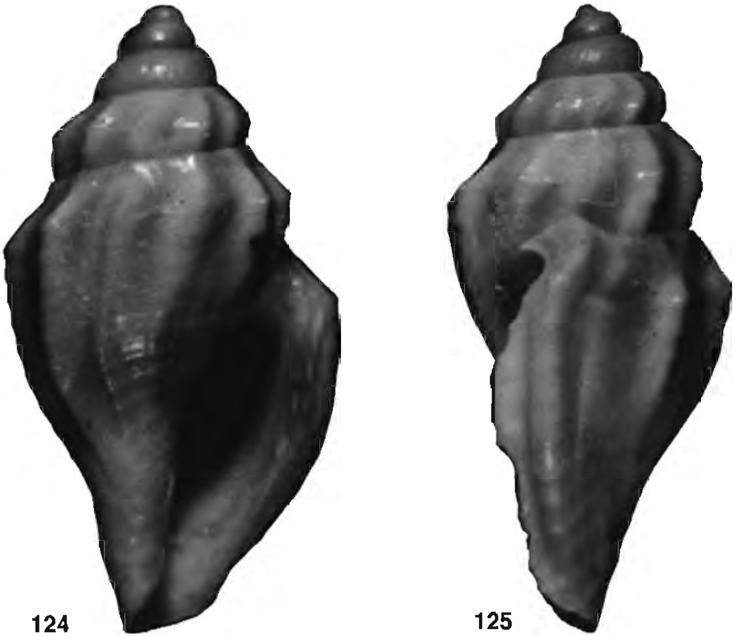
Etymology: *perlucidulus* = somewhat transparent, Latin.

Leiocithara zamula sp. n.

Figs 124–125

Diagnosis: Shell short-biconical, b/l 0,51–0,58, a/l 0,53–0,59, with low spire, moderately blunt apex, and large aperture, whorls angular, not shouldered, periphery bearing a moderately strong spiral ridge, which forms a series of bluntly angular tubercles; whorls shallowly concave below suture where slightly adpressed to previous whorl; outer lip distinctly pinched-in anteriorly, interior without denticles or nodules; no parietal pad or nodule; prelabral varix compressed but high; up to 3 teleoconch whorls. Axial ribs 9–12 per whorl; anterior to periphery with low spiral threads (about 16 on body whorl), most clearly defined on rostrum. Protoconch broadly conical, of about 2,5 whorls [+1 decollated], base of 1st one strongly tilted, brephic axials numbering 25–30, breadth 0,83-0,95 mm. Yellowish-white, tinged with buff between ribs. Maximum length 5,5 mm.

Description: Shell abbreviated-biconical (b/l 0,51–0,58, a/l 0,53–0,59) with a relatively large aperture, moderately produced, rather rapidly tapering base and low, moderately blunt, orthoconoid to slightly cyrtoconoid spire; teleoconch



Figs 124–125. *Leiocithara zamula* sp. n.: holotype, NMSA E5582/T264, 4,0 × 2,3 mm.

whorls 3 in number; suture moderately shallow, not undulating; whorl profile angular, not shouldered, whorl profile below periphery flat to slightly convex; no subsutural ridge, but sutural margin adpressed against base of previous whorl, so that subsutural profile is slightly concave; siphonal canal moderately short, distinctly oblique, moderately narrow, widening slightly towards tip, weakly differentiated from aperture, its termination obliquely truncate, not indented; left side of base more or less strongly concave, fasciole absent. Aperture relatively wide, greatest width at posterior third, gradually narrowing anteriorly, rather straight except for posterior angle which curves somewhat to the right, outer lip anteriorly not effuse, distinctly pinched-in; columella moderately long and almost straight, only curving at siphonal canal and at junction with paries, which is relatively short; labial callus fairly thick, its outer margin very slightly free on columella, sometimes forming a slight pseudo-umbilical notch, not visibly microshagreened, without a parietal pad or nodule; outer lip preceded by a compressed but rather wide varicoid rib; edge of lip sharp, incurved, interior with neither denticles nor a posterior tubercle; lip convex in side-view, anal sinus occupying entire shoulder slope, fairly deep and rather symmetrically U-shaped; [stromboid notch not visible in types].

Sculptured by strong axial ribs, which are not regularly continuous; peripheral lira moderately strong, forming a series of low, bluntly angular, compressed tubercles, on 1st whorl situated slightly below median, on 2nd slightly above it; base of body whorl (anterior to periphery) with very low, ill-defined spiral threads; growth lines distinct, particularly strong behind outer lip. Axial ribs narrower than / subequal to their intervals, which are gently concave (in places flattened), their crests in t/s roundedly angular, their slopes steep, the leading face markedly concave; orientation rather strongly opisthocline, rather sinuous, usually weak just below suture and sometimes above it, on body whorl usually continuing to upper rostrum; 10–12 axial ribs on 1st whorl, 9–12 on last one. Basal lirae about 16 in number (but difficult to count), those on rostrum stronger than elsewhere.

Yellowish-white, tinged between the ribs with buff.

Protoconch broadly orthoconoid, of about 2,5 whorls [+ 1 decollated], remnant of base of initial whorl strongly tilted; subsequent whorls convex; smooth, except for approximately 25–30 dense, arcuate, strongly opisthocline axial ribs on last whorl, initially very weak; breadth 0,83–0,95 mm, height 0,60–0,80 mm (b/h 1,19–1,38).

Dimensions: 4,0 × 2,3 mm (holotype and smallest adult); 5,5 × 2,2 mm (largest paratype, base chipped).

Distribution: Upper continental slope of eastern Transkei to outer shelf of Zululand, muddy substrata in about 160–350 m (dead shells only).

Type material (all NMSA: NMDP): Holotype E5582/T264, off Mgazi River, Transkei (31°44,3'S:29°32,2'E), 350 m, glutinous black mud. Paratypes 1–5, E5591/T263, same data; 6–7, E7939/T261, do, 300 m, soft black mud; 8–11, E5468/T262, off Cape St Lucia, Zululand, 160–180 m, coarse sand with mud.

Notes: As indicated in the introduction, *L. zamula* is an aberrant member of the genus in lacking apertural denticles, but shape, sculpture and protoconch characters conform well. All known specimens are rather chalky.

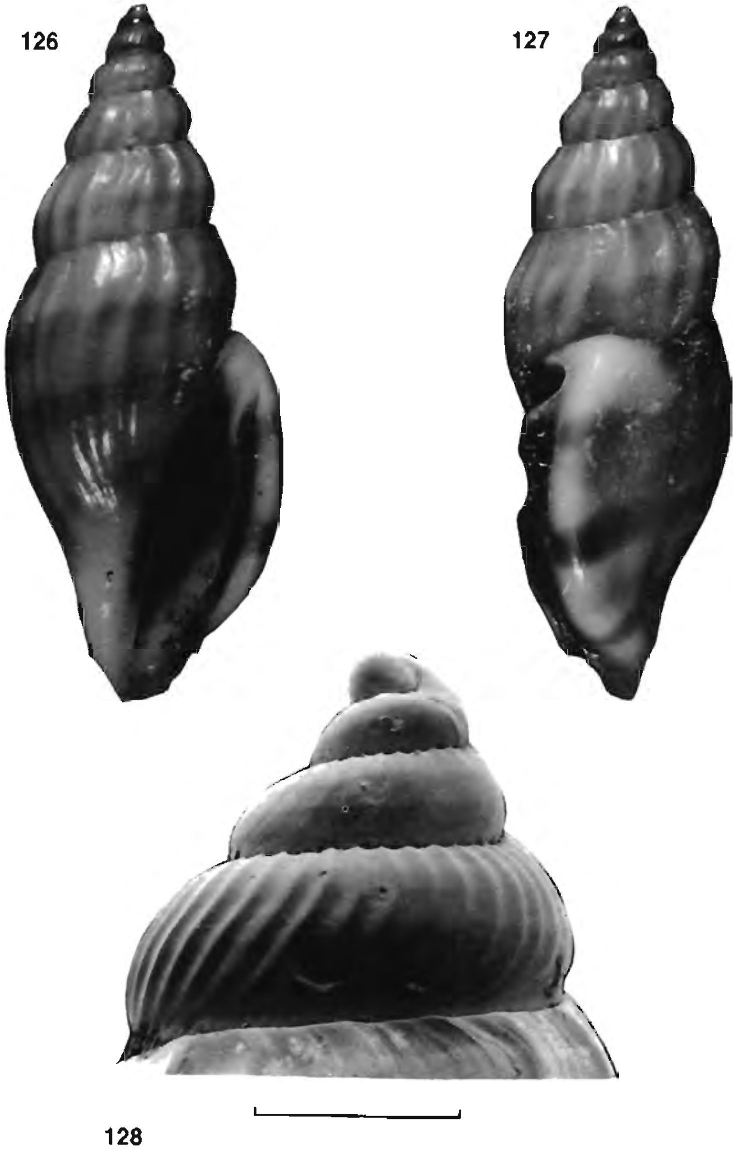
Etymology: *zamula* – to yawn, Zulu.

Leiocithara porcellanea sp. n.

Figs 126–128

Diagnosis: Shell fusiform, b/l 0,37–0,45, a/l 0,46–0,53, with sharp apex, left side of base moderately concave; opaque and very glossy, whorls not shouldered, periphery with rounded angle, bearing neither a spiral ridge nor tubercles, whorl profile above periphery somewhat flattened to slightly concave; outer lip distinctly pinched-in anteriorly, its interior with a single low to very low, broad nodule below anal sinus; parietal pad weak, forming a small, angular nodule; prelabral varix strong; about 5 teleoconch whorls. Axial ribs sinuous, moderately strong below suture, 11–15 per whorl; no spiral lirae other than 8–11 threads on rostrum. Protoconch narrowly conical, of about 3,6 whorls [+ 1 decollated], base of 1st one strongly tilted, axials commencing on penultimate whorl, 23–30 on last whorl; breadth 0,90–1,03 mm. Very pale buff with faint darker transverse bands (3 median bands on body whorl, with a darker one below suture), terminating in orange-brown bars on varix. Maximum length 11,3 mm.

Description: Shell fusiform (b/l 0,37–0,45, a/l 0,46–0,53) with a produced, strongly tapering, somewhat constricted base and sharp, orthoconoid spire; teleoconch whorls up to 5 in number; suture fairly shallow, sometimes slightly undulating; whorl profile convex with weakly angular periphery situated at or just above midwhorl, profile somewhat flattened or very slightly concave above periphery, outer lip sometimes weakly shouldered; no subsutural ridge nor is sutural margin tightly adpressed against previous whorl; siphonal canal moderately short, slightly oblique, more or less parallel-sided and wide, indistinctly differentiated from aperture, its termination obliquely truncate, not



Figs 126–128. *Leiocithara porcellanea* sp. n.: **126–127**, holotype, NMSA C2901/T145, 9,1 × 3,8 mm; **128**, SEM of protoconch of juvenile paratype, S1312/T434, bar = 300 μ.

indented; left side of base slightly concave, fasciole weak. Aperture narrow, rather straight and somewhat parallel-sided, tapering posteriorly, outer lip not effuse anteriorly; columella long and straight, curving gently at junction with paries, which is rather short; labial callus fairly thick, its outer margin slightly free on columella, sometimes forming a feeble pseudo-umbilicus; smooth (although microscopically rugose) except for a small, angular parietal nodule a short distance below end of lip; outer lip preceded by a thick, varicoid rib; edge of lip very thin and sharp, internally smooth, except for a broad, low to very low tubercle anterior to anal sinus; lip moderately convex in side-view, anal sinus slightly below suture, moderately deep and asymmetrically U-shaped; stromboid notch absent.

Surface highly glossy, sculptured by low axial ribs, not continuous from whorl to whorl, spiral sculpture absent, except for 8–11 threads on base of body whorl, and an occasional fugitive trace of striations elsewhere. Axial ribs subequal to their intervals (which are gently concave to somewhat flattened), their crests in t/s roundedly angular, their leading face concave, their trailing one convex or flat; orientation opisthocline, somewhat sinuous, slightly protractively curved on shoulder slope, extending from suture to suture, and rising very slightly at suture, on body whorl continuing onto upper rostrum; 11–14 axial ribs on 1st teleoconch whorl, 11–15 on later ones.

Coloured with obscure to moderately well-defined zones of pale orange-brown and very pale buff to whitish, one dark zone lying at periphery, a darker zone (which is largely interstitial) below suture, body whorl with three median zones, which terminate as conspicuous orange-brown bars behind lip varix and on lip, sometimes showing also inside aperture; columella more or less stained with orange-brown; protoconch white to pale orange.

Protoconch narrowly conical, of about 3,6 whorls [+ 1 decollated], base of 1st whorl strongly tilted; initially smooth, axial ribbing commencing on penultimate whorl, last whorl with 23–30 arcuate, opisthocline ribs; breadth 0,90–1,03 mm, height 0,85–1,05 mm (b/h 0,96–1,11).

Dimensions: 9,1 × 3,8 mm (holotype); 11,3 × 4,2 mm (largest paratype).

Range: Kei River to northern Zululand, 75–160 m (rarely as deep as 370 m), sand and rubble.

Type material (all NMSA: NMDP, unless otherwise stated): Holotype C2901/T145, off Ubombo, Transkei (31°55,3'S:29°21,4'E), 96 m, sand and gravel. Paratypes: TRANSKEI: off Kei River, 138 m, coarse sand, (C5114/T148, 1 juvenile); off Sandy Point, 94 m, gorgonians, sponges (C7579/T149, 2); off Nqabara Point, 95 m, sponge and sand (C4155/T294, 1); off Nthlonyane, 130 m, coarse brown sand, old calcareous fragments (C7196/T147, C2692/T178, 3); off Mncwasa Point, 90 m, coarse sand (C2241/T146, 1); off Port Grosvenor, 80 m, worn calcareous nodules (C7330/T158, 1); do, 82 m, coral nodules (S1312/T434, 1 juv.); off Mtamvuna River, 137 m, rocks, sponges (C7563/T156, 1); do, 160 m, sponges, gorgonians, sand (E150/T157, 1); do, 75 m, rocks, sponge (C877/T295, 1). NATAL: off Park Rynie, 96 m, sponges (B8563/T154, 1); do, 120 m, rubble, solitary corals (B3817/T296, 2); do, 100 m, sand, sponge rubble (B3712/T150, 3); S. E. of Green Point, 100 m, fine sand and rubble (D3980/T175, 1); off Amanzimtoti, 115–125 m, medium sand (D1284/T155, 1); off Umlaas Canal, 150 m, coarse sand, numerous spatangoids, pebbles (D1621/T153, 1); do, 150 m, muddy sand and fine pebbles (D1163/T152, 1); off Durban, 110–120 m, coarse muddy sand (E5671/T162, 2); S. E. of Sheffield Beach, 100–105 m, glutinous grey mud (E5040/T293, 1). ZULULAND: S. E. of Mission Rocks, 100 m, medium sand (E3840/T163, 1); off Mission Rocks, 198 m, medium sand (E4755/T161, 1); off Cape Vidal, 165 m, moderately fine sand (E3768/T159, 2); off Cape Vidal, 75–80 m, broken shell (E4507/T160, 1); S. E. of Kosi Bay, 370 m, rocks (E2118/T151, 1).

Notes: *L. porcellanea*, as pointed out in the introductory notes to the genus, displays shell characters of both *Leiocithara* and *Citharomangelia*; when its radula is known it may prove unrelated to either (although numerous samples are available, none appear to contain soft parts). However, a connecting link to *Leiocithara* is provided by the closely related *Pleurotoma (Mangilia) lischkei* E. A. Smith, 1888, from Japan (Figs 190–191). *L. lischkei* is less fusiform in shape than *porcellanea*, and its whorls show a distinct peripheral angle, resultant from the presence of a weakly developed peripheral cord.

Etymology: *porcellanea* = porcellaneous, Medieval Latin.

APPENDIX

The following species were among those examined in the course of my work on south-east African material. It will be observed that given notes vary greatly in detail, according to the relevance of the species and other factors (Smith's descriptions, for example, contain far more detail than those of Reeve or Hinds). Although in a few cases I have suggested synonymies, it is stressed that no pretence of a formal revision of the Indo-Pacific mangeliines is made, nor has more than a small proportion of described species been covered, in general the more poorly known ones.

Eucithara delacouriana (Crosse, 1869)

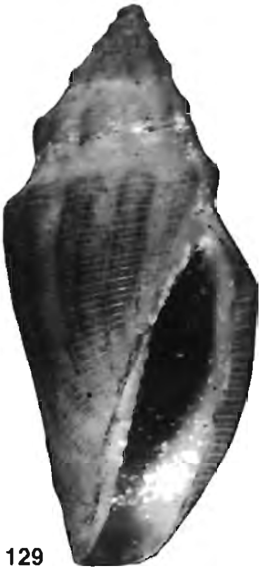
Figs 129–130

Cithara delacouriana Crosse, 1869: 178; *idem*, 1872: 66, pl. 2, fig. 4. Type locality: Noumea, New Caledonia.

Cithara matakuana E. A. Smith, 1884a: 328. Type locality: Mataku, Fiji Islands.

Eucithara stromboides (non Reeve, 1846); Hedley, 1922: 272 (except for references); Maes, 1967: 142, text fig. 4D (radula), pl. 15, fig. 1; Cernohorsky, 1972a: 186, pl. 54, fig. 1.

Type material: The holotype of *C. delacouriana* in MHNP has an immature outer lip (Fig. 129). Two syntypes of *C. matakuana* are accessioned as BMNH 1856.10.27.52; unpublished data on the label adds the depth of 4 fathoms and the source as 'The Admiralty'; a lectotype measuring 10,8 × 4,5 mm (Fig. 130) is here designated.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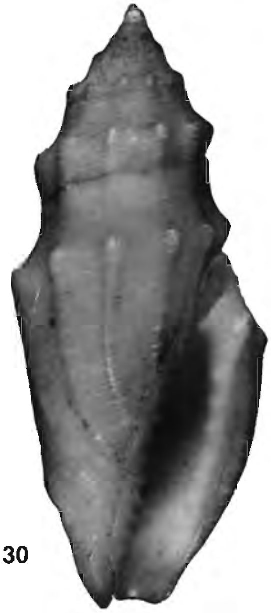
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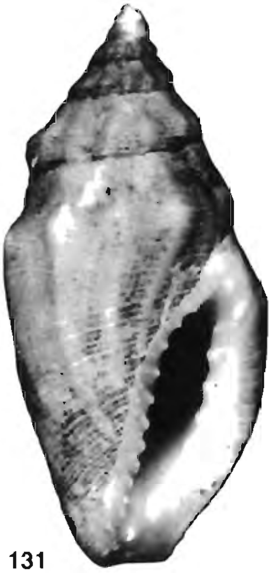
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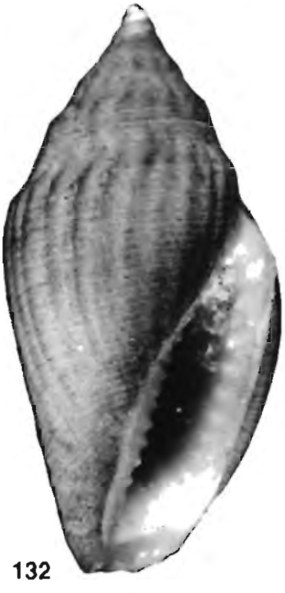
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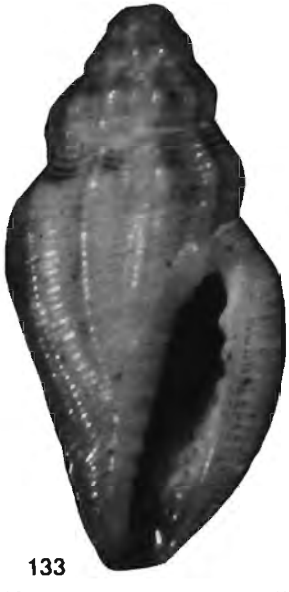
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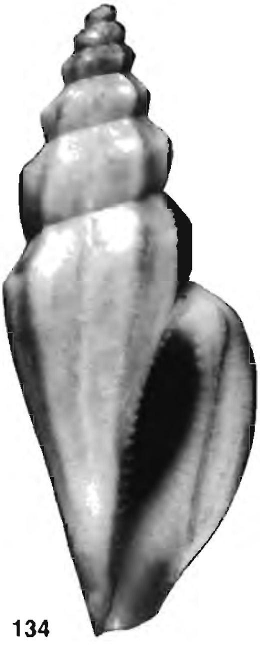
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Figs 129–134. *Eucithara delacouriana* (Crosse, 1869), *E. ringens* (Sowerby, 1893), *E. striatissima* (Sowerby, 1907) and *E. capillata* (Hervier, 1897), and *E. seychellarum* (E. A. Smith, 1884). **129–130**, *E. delacouriana*: **129**, holotype of *Cithara delacouriana*, MHNP, 12,7 × 5,6 mm (photograph courtesy of P. Lozouet); **130**, lectotype of *Cithara matakuana* Smith, 1884, BMNH 1856.10.27.52, 10,8 × 4,5 mm. **131**, *E. ringens*: holotype of *Cythara ringens*, BMNH 93.8.18.11, 6,2 × 2,6 mm. **132**, *E. striatissima*: holotype of *Cythara striatissima*, BMNH 1907.8.28.35, 9,5 × 4,6 mm. **133**, *E. capillata*: possible syntype of *Cithara capillata*, MHNP, 6,8 × 3,2 mm, courtesy P. Lozouet. **134**, *E. seychellarum*: holotype of *Cithara seychellarum*, BMNH 1869.6.12.18, 13,8 × 5,1 mm.

Notes: This species varies greatly in shape, and I agree with previous workers in synonymising *matakuana* with *delacouriana*. The differences between *E. delacouriana* and *E. fusiformis / stromboides* are discussed below under *fusiformis*.

Eucithara ringens (Sowerby, 1893)

Fig. 131

Cythara ringens Sowerby, 1893: 491, pl. 38, figs 29, 30. Type locality: Hong Kong.

Type material: Holotype BMNH 93.8.18.11.

Notes on holotype: Axial ribs arcuate, weak below suture and projecting mainly at periphery, continuing to upper part of the ill-defined fasciole, 12 ribs on penultimate whorl. Spiral lirae fine (about 23 on penultimate whorl), pricked by finer axial plicules, which render the interstices minutely puncticulate. Outer lip with 8 denticles, inner lip with 12 plicae (plus a few irregular ones), 5 of which form a fossula internally. White. Protoconch conical, of about 1,2 whorls, smooth except for axial plicules near termination. Dimensions: 6,2 × 2,6 mm.

Eucithara striatissima (Sowerby, 1907)

Fig. 132

Cythara striatissima Sowerby, 1907: 294, pl. 25, fig. 3. Type locality: New Caledonia.
Mangilia (Cithara) striatissima; Bouge & Dautzenberg, 1914: 166.
Eucithara striatissima; Hedley, 1922: 271, pl. 46, fig. 68.

Type material: Holotype BMNH 1907.8.28.35, dimensions 9,5 × 4,6 mm.

Notes: Hedley's illustration of an immature shell from the Torres Straits appears to have been correctly identified.

Eucithara capillata (Hervier, 1897)

Fig. 133

Cithara capillata Hervier, 1897: 54, 181, pl. 8, fig. 2. Type locality: Lifou, Loyalty Islands.
Eucithara capillata; Hedley, 1922: 265.

Type material: Two possible syntypes MHNP, *ex auct.* Remaining syntypes presumably in the Lyon Museum.

Eucithara seychellarum (E. A. Smith, 1884)

Fig. 134

Cithara seychellarum E. A. Smith, 1884a: 328. Type locality: Seychelle Islands.

Type material: Holotype BMNH 1869.6.12.18, leg. E. P. Wright.

Notes on holotype: Axial ribs 10 on penultimate whorl, spiral threads flattened, defined by their scratch-like intervals. Inner lip with 24 pleats, not interrupted to form a fossula; outer lip with 18 plicae, situated well inside aperture. Dimensions: 13,8 × 5,1 mm.

Eucithara fusiformis (Reeve, 1846)

Figs 135–137

Mangelia fusiformis Reeve, 1846a: pl. 3, sp. 19; *idem*, 1846b: 61; Tomlin, 1934: 40. Type locality: 'Isle of Corregidor, Philippines (found among coarse sand at the depth of ten fathoms).'
Mangilia fusiformis; Tryon, 1884: 268, pl. 23, fig. 2 (after Reeve).
Cithara fusiformis; Boettger, 1895: 46; Schepman, 1913: 71.
Cythara hypercalles Melvill, 1898: 12, pl. 1, fig. 5; *idem*, 1917: 181. Type locality: Muscat, Oman, 20 fathoms.
?*Mangelia stromboides* Reeve, 1846a: pl. 5, fig. 33; *idem*, 1846b: 63. Type locality: Bohol, Philippines.
Not: *Eucithara stromboides auctt.* = *E. delacouriana*.

Type material: The types of *M. fusiformis* are apparently lost, although a copy of Reeve (1846a) in the BMNH library, annotated by E. A. Smith, indicates that 4 syntypes (reg. no. 1963464) were once present. One syntype of *Cythara hypercalles* is NMW 1955.158.473, and the other (figured) syntype (here designated as lectotype) is BMNH 1898.5.7.31, dimensions 15,1 × 5,1 mm. A worn and faded specimen labelled as the holotype of *Mangelia stromboides* (BMNH 1963457, *ex* H. Cuming colln) is at most a syntype; it cannot be the figured specimen, which not only differed in details of outline and in retaining its apex, but appears to have had 9 axial ribs on the penultimate whorl, instead of 8; inner lip in syntype specimen bears 20 denticles, outer lip with 14.

Notes: Although *M. fusiformis* was illustrated solely in dorsal view by its describer, this figure matches fairly closely the subsequently described *Cythara hypercalles* Melvill, 1898, and I agree with a note left by E. A. Smith (see also Tomlin 1934) that the two are evidently synonymous.

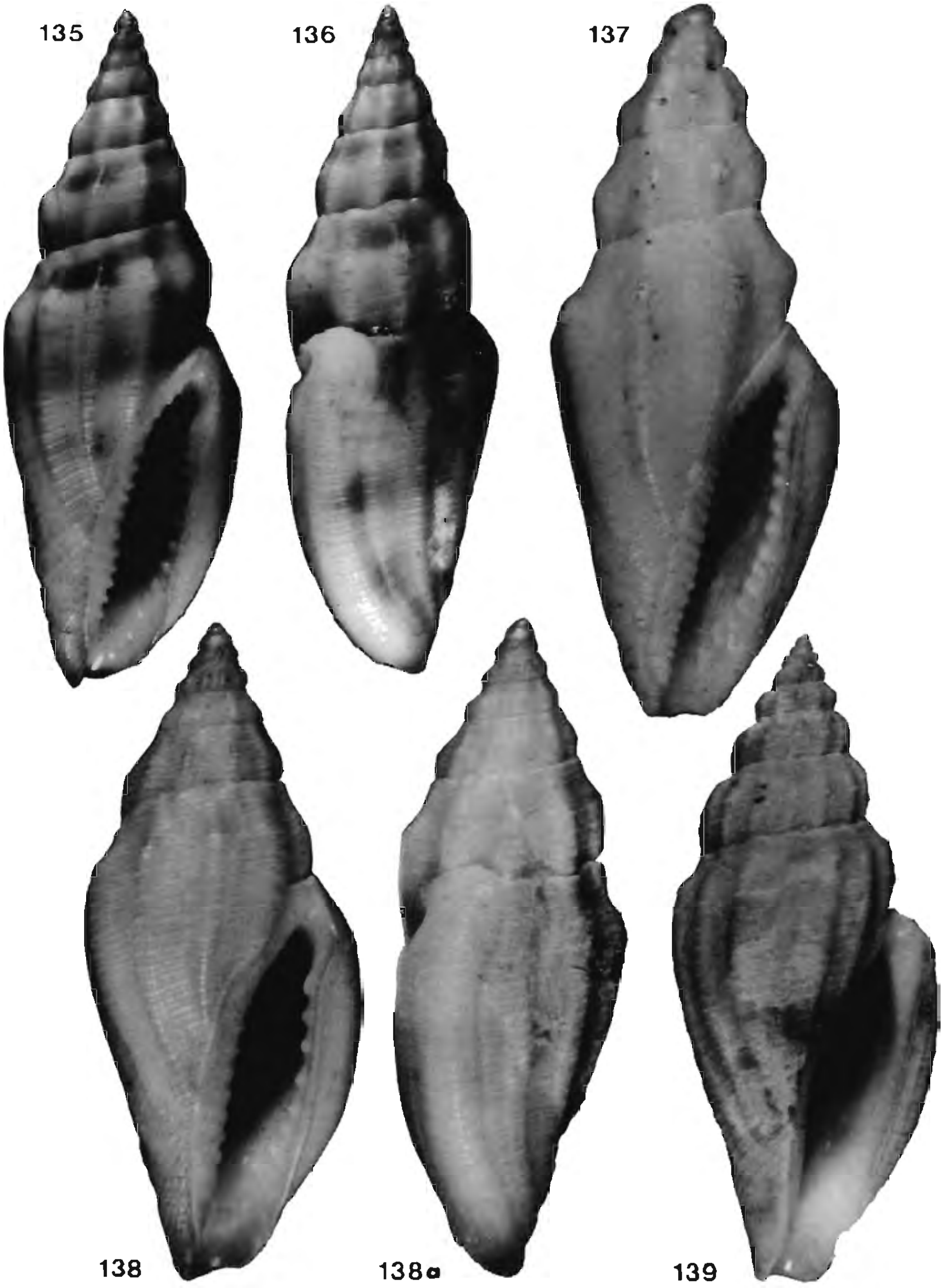
Smith (MS note) and Tomlin (1934) were also probably correct in synonymising here *Mangelia stromboides* Reeve, 1846. However, insufficient is known about variation within *fusiformis*, and as *stromboides* appears to have a somewhat more obconical body whorl, I have listed this synonymy with a query, and figured it as a full species. Certainly, Hedley (1922) and subsequent authors are incorrect in treating the common *Eucithara delacouriana* (Crosse, 1869) as a synonym of *stromboides*. In *delacouriana* the whorls rise up the base of the preceding one, sometimes enveloping it almost to the periphery; this renders the suture more strongly undulant and gives the shell a more biconical appearance. Furthermore, in *delacouriana* the inner lip bears only 12–15 teeth, those on the outer lip are tubercular rather than pliciform and the sculpture on the shoulder slope is characteristically finely cancellate.

Eucithara elegans (Reeve, 1846)

Figs 138–138a

Mangelia elegans Reeve, 1846a: pl. 6, sp. 41; *idem*, 1846b: 63. Type locality: 'Island of Mindoro, Philippines.'

Type material: Three syntypes of *Mangelia elegans* are registered as BMNH 1963437, *ex* H. Cuming colln; one, measuring 9,6 × 4,1 mm, is here designated lectotype.



Figs 135–139. *Eucithara fusiformis* (Reeve, 1846), *E. stromboides* (Reeve, 1846), *E. elegans* (Reeve, 1846) and *E. guentheri* (Sowerby, 1893). **135–136**, *E. fusiformis*: lectotype of *Cythara hypercalles* Melvill, 1898, BMNH 96.5.7.31. 15,1 × 5,1 mm. **137**, *E. stromboides*: lectotype of *Mangelia stromboides*, BMNH 1963457, 11,9 × 4,6 mm. **138-138a**, *E. elegans*: lectotype of *Mangelia elegans*, BMNH 1963437, 9,6 × 4,1 mm. **139**, *E. guentheri*: lectotype of *Cythara guentheri*, BMNH 92.1.29.28–9, 25,4 × 10,5 mm.

Notes: Tomlin (1934), acting as first revisor, may have been correct in synonymising *M. elegans* with *E. fusiformis* (Reeve, 1846). However, syntypes of *elegans* have a lower spire, and in shape resemble more closely the holotype of *E. duplaris* (Melvill, 1923); they differ from the latter and from *fusiformis* in being smaller (9,8–10,7 mm instead of 12,7–16,3 mm) and in having only 9–11 teeth on the outer lip (instead of 13–14 as in *fusiformis*, 14–16 in *duplaris*), and 12–14 on the inner lip (17–18 in *fusiformis*, 20–21 in *duplaris*), and in the labial teeth in the posterior parietal region becoming feeble and irregular. However, this apparent difference in apertural dentition may merely be correlated with overall size.

Eucithara guentheri (Sowerby, 1893)

Fig. 139

Cythara guentheri Sowerby, 1893: 491, pl. 38, figs 27, 28. Type locality: Holothuria Banks, N. W. Australia, 38 fathoms.
Eucithara guentheri; Hedley, 1922: 267, pl. 46, fig. 61.

Type material: Two syntypes BMNH 92.1.29.28-9; the lectotype (here designated and figured) measures 25,4 × 10,5 mm.

Notes: This is the largest species of the genus *Eucithara*. The shell surface is interstitially microcancellate.

Eucithara antillarum (Reeve, 1846)

Figs 140–141

Mangelia antillarum Reeve, 1846a: pl. 1, sp. 4a, b; *idem*, 1846b: 59. Type locality: West Indies.
Mangilia antillarum; Tryon, 1884: 261.

Type material: Two syntypes, BMNH 1963455, H. Cuming colln. Of these, one (Fig. 140), segregated as 'the type' is a very worn shell, dimensions 17,2 × 8,2 mm, but agrees in shape with the original figures, and is here designated lectotype. The second shell (dimensions 19,1 × 7,8 mm) is in considerably better condition (Fig. 141), and may have been added subsequent to the description of the species.

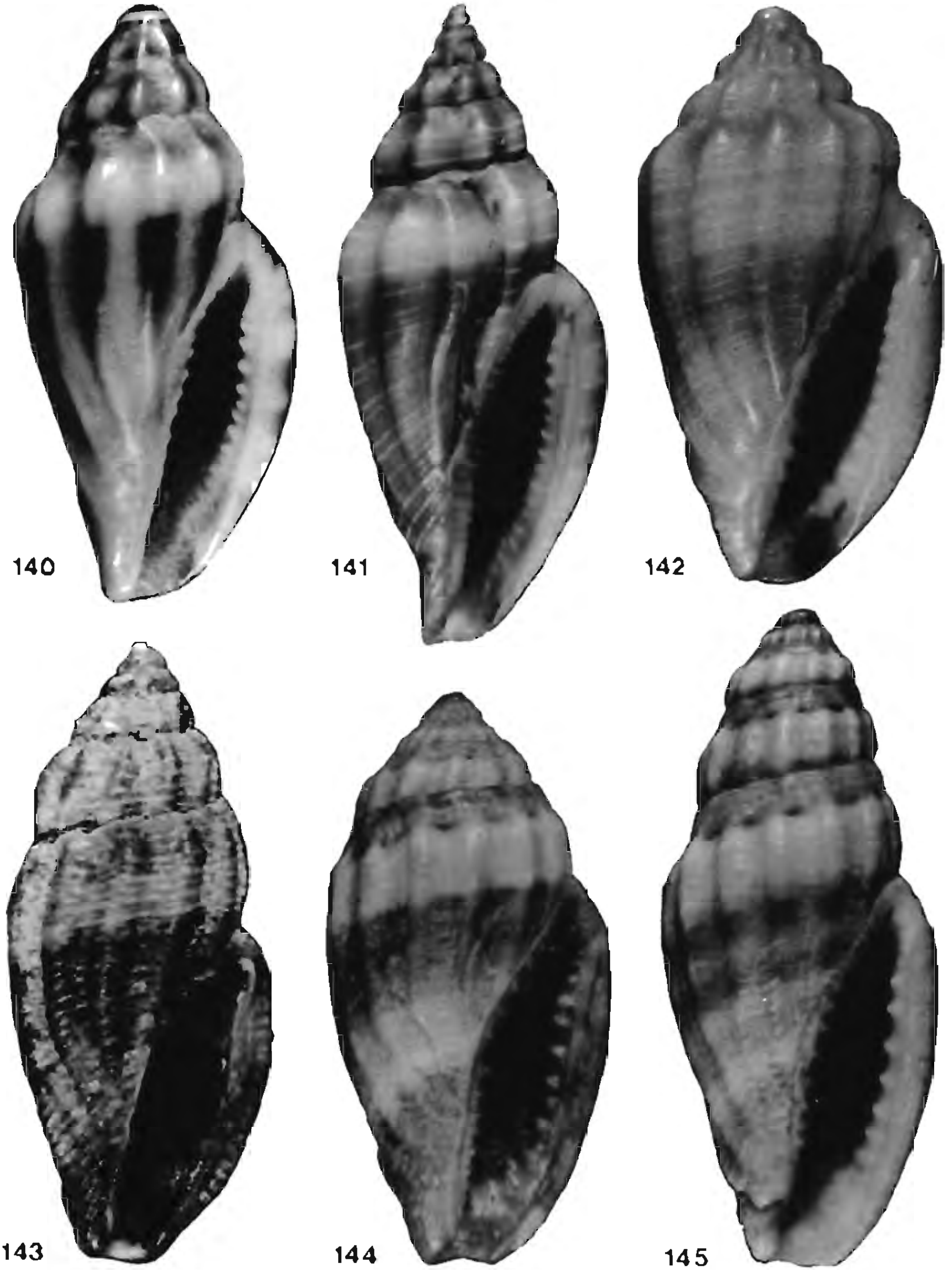
Notes on BMNH specimens: Axial ribs 9–10 on penultimate whorl, with very faint spiral threads (8 visible on 3rd whorl). Outer lip with 16 short plicae, inner lip with 14–24 low but long columella plicae, shallowly divided longitudinally to form a fossula of 9 plicae. Light brown, with a whitish peripheral zone, covered overall with white spiral hair-lines.

Note: Tryon's observation that the supposed Caribbean origin of this species was unconfirmed, still seems to apply.

Eucithara gibbosa (Reeve, 1846)

Fig. 142

Mangelia gibbosa Reeve, 1846a: pl. 3, sp. 21; *idem*, 1846b: 61. Type locality: Island of Ticao, Philippines (found on the reefs).
Not: *Eucithara gibbosa*; Hedley, 1922: 267 [= *Eucithara novaehollandiae* (Reeve, 1846)].



Figs 140–145. *Eucithara antillarum* (Reeve, 1846), *E. gibbosa* (Reeve, 1846), *E. bicolor* (Reeve, 1846) and *E. obesa* (Reeve, 1846). **140–141**, *E. antillarum*: 140, lectotype of *Mangelia antillarum*, BMNH 1963455, 17,2 × 8,2 mm; **141**, paralectotype, same accession number, 19,1 × 7,8 mm. **142**, *E. gibbosa*: lectotype of *Mangelia gibbosa*, BMNH 1963448, 8,0 × 4,5 mm. **143**, *E. bicolor*: lectotype of *Mangelia bicolor*, BMNH colln, 7,4 × 3,1 mm. **144–145**, *E. obesa*: **144**, lectotype of *Mangelia obesa*, BMNH 1963443, 10,1 × 5,0 mm; **145**, lectotype of *Mangelia reticulata* Reeve, 1846, BMNH 1963442, 13,9 × 5,6 mm.

Type material: Three specimens (BMNH 1963448) are labelled as syntypes, one of which is indicated as 'The type' [here designated as lectotype]; one of the others is in much fresher condition, and was probably added subsequently.

Notes: See under *Eucithara novaehollandiae*.

Eucithara bicolor (Reeve, 1846)

Fig. 143

Mangelia bicolor Reeve, 1846a: pl. 5, sp. 31; *idem*, 1846b: 62. Type locality: Island of Ticao, Philippines.
Mangilia bicolor; Bouge & Dautzenberg, 1914: 147.
Eucithara bicolor; Hedley, 1922: 264 (references).

Type material: Two syntypes, BMNH colln. (no accession number), 1 with a juvenile lip, the other here designated as lectotype.

Notes on types: Columella with 6 plicae, outer lip with 9 small denticles, posterior two largest. Axial ribs projecting slightly above suture, intervals between coronations pitted; ribs in t/s strongly raised, leading face slightly concave, trailing face steep, more or less equal in width to intervals; 11 ribs on penultimate whorl. Spiral sculpture relatively coarse, three orders of strength, alternately weaker and stronger, 14–16 main spirals on penultimate whorl, rounded; interstitial spirals rendered minutely granular by fine collabral threads. Dark grey, with greyish-white peripheral band, visible inside aperture. Dimensions of lectotype: 7,4 × 3,1 mm.

Eucithara obesa (Reeve, 1846)

Figs 144–145

Mangilia reticulata Reeve, 1846a (*non* Risso, 1826): pl. 3, sp. 17; *idem*, 1846b: 61. Type locality: Island of Ticao, Philippines (found on the reefs). **Syn. n.**
Mangilia (Cithara) reticulata; Bouge & Dautzenberg, 1914: 164.
Eucithara reticulata; Cernohorsky, 1972a: 187, pl. 54, figs 3, 3a.
Mangelia vittata Reeve, 1846a, *non* Hinds, 1843: pl. 2, sp. 14; *idem*, 1846b: 60. Type locality: Island of Ticao, Philippines (found on the sands).
Mangilia obesa Reeve, 1846a: *erratum*, on index page (*nom. subst. pro vittata* Reeve, 1846, *non* Hinds).
Eucithara guestieri (*non* Souverbie, 1872); Springsteen & Leobrera, 1986: 276, pl. 79, fig. 7.

Type material: Three syntypes of *E. reticulata* are registered as BMNH 1963442, *ex* H. Cuming colln; one (Fig. 145) is here designated as lectotype; it measures 13,9 × 5,6 mm. Two specimens are labelled as syntypes of *M. obesa*, BMNH 1963443, *ex* Cuming colln; one (Fig. 144) is isolated as 'The type' [here designated as lectotype], but the other, fresher example, has probably been added subsequently.

Notes: Cernohorsky (1972) noted the variability of coloration in this species, and also commented on the resemblance between some of his specimens and the original description of *obesa*. Judging by the respective type material, *obesa* is certainly based on a low-spired example of *reticulata*, in addition differing slightly in colour from the syntypes of that. As *Mangelia reticulata* is a junior homonym, the name *obesa* becomes available for the species. *Pleurotoma guestieri* Souverbie, 1872, applied to this species by Springsteen & Leobrera (1986), appears to be a synonym of *Eucithara novaehollandiae* (Reeve, 1846) (q.v.).

Reeve recognised that the name *Mangelia vittata*, which he first proposed for this species, was a junior homonym, and substituted for it the name *obesa*. Confusingly, the specimen figured by Reeve (1846a) for the prior *M. vittata* Hinds, 1843, was misidentified, and was later renamed *Pleurotoma (Glyphostoma?) exquisita* E. A. Smith, 1882; this appears to be referable to genus *Cytharopsis*, and will be discussed in a later paper.

Eucithara unilineata (E. A. Smith, 1876)

Figs 146–147

Cythara unilineata E. A. Smith, 1876: 538, pl. 30, fig. 13. Type locality: San Christoval, Solomon Islands.
Mangilia (Cithara) unilineata; Bouge & Dautzenberg, 1914: 166.
Cithara raffini Hervier, 1898: 55, 184, pl. 8, fig. 4. Type locality: Lifou, Loyalty Islands.

Type material: Holotype of *C. unilineata* (Fig. 146) is BMNH 1876.1.10.35, *ex* J. Brazier. Types of *C. raffini* probably in Lyon, one possible syntype in MHNP, three (Trew 1991) NMWC 1955.158.1491 (Fig. 147).

Notes on holotype of *C. unilineata*: Axial ribs rather compressed, rounded in t/s, slightly over half width of their flattened intervals, almost straight (very slightly procurved below suture), opisthocline, somewhat continuous across later whorls; 9 on 1st whorl, 10 on penultimate. Spiral lirae of well-spaced, more or less equal threads, 24 on penultimate whorl, interstices with extremely minute spiral and oblique striae; spiral sculpture coarse on base [but worn]. Inner lip with about 16 small pleats, internally forming a fossula of 7 plicae. Outer lip with about 7 widely spaced [but worn] plicae. Brownish-white, with a diffuse orange-brown line at basal 0,25 of each spire whorl and upper 0,3 of body whorl. Dimensions: 14,5 × 5,3 mm (protoconch missing).

Notes on species: Although I have seen only a single example of each, I am inclined to follow Bouge & Dautzenberg in synonymising *raffini* with *unilineata*.

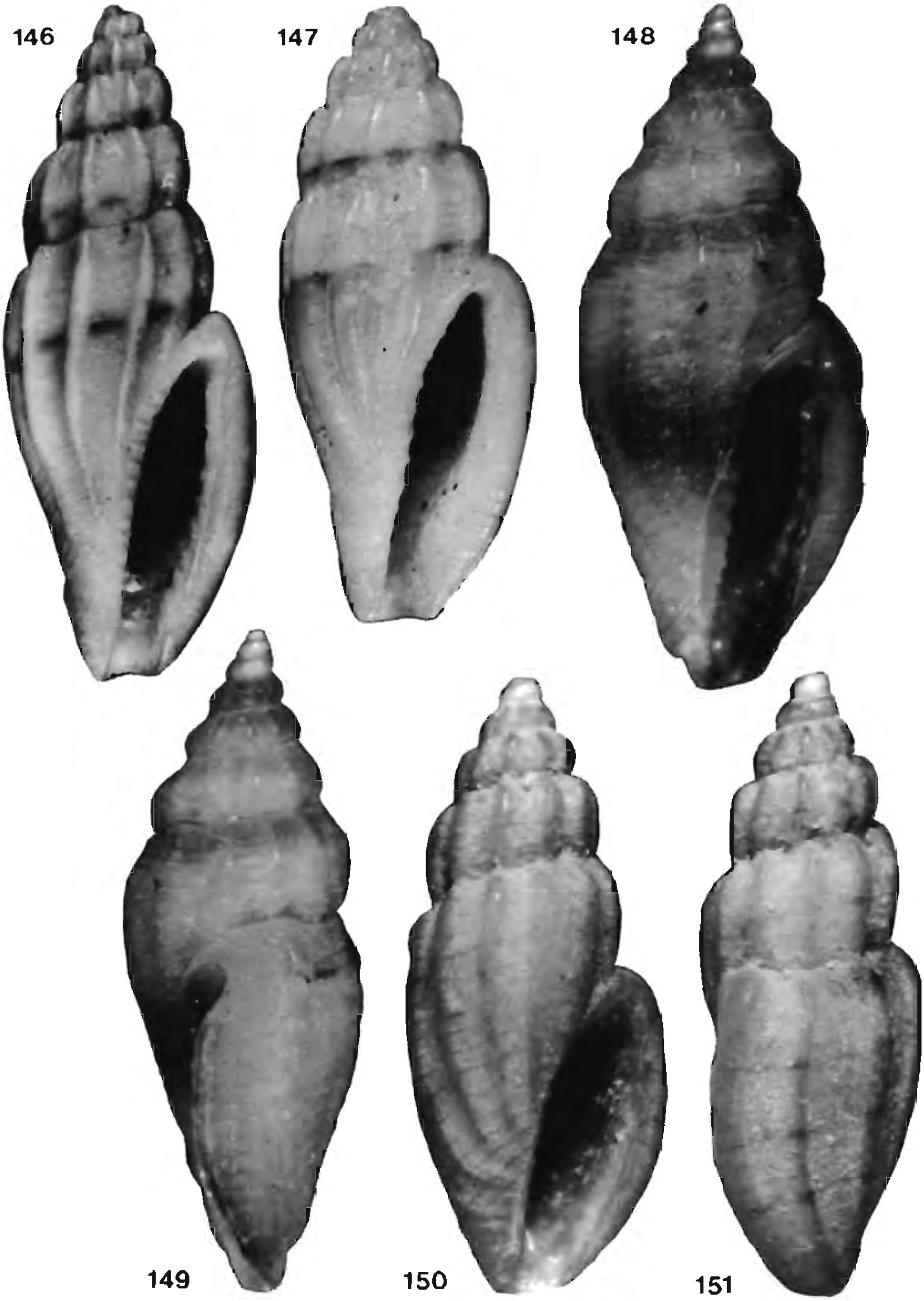
Eucithara gruveli (Dautzenberg, 1932)

Figs 148–149

Glyphostoma gruveli Dautzenberg, 1932: 21, pl. 1, fig. 5. Type locality: 'Ankoriko, pointe des Sables', Madagascar.

Type material: Holotype ISNB, *leg.* Decary.

Notes on holotype: Early teleoconch whorls with slightly angular periphery, just below median, shoulder slope flat to slightly concave; suture shallow, whorl adpressed below it. Aperture more or less parallel-sided, except at level of posteriormost lip tooth where it is constricted; anal sinus shallow, slightly asymmetrical, U-shaped; repaired damage to base forms false umbilicus; inner lip with 10 pleats, strongest medially, posterior one forming a parietal ridge, columella without a fossular groove; outer lip with 10 teeth, weakest medially, posterior one relatively strong. Axial ribs not continuous, moderately



Figs 146–151. *Eucithara unilineata* (Smith, 1876), *E. gruveli* (Dautzenberg, 1932) and *E. bisacchii* (Hornung & Mermod, 1928). **146–147**, *E. unilineata*: **146**, holotype of *Cythara unilineata*, BMNH 1876.1.10.35, 14,5 × 5,3 mm; **147**, possible syntype of *Cithara raffini* Hervier, 1899, MHNP, 10,2 × 4,2 mm, photograph courtesy of P. Lozouet. **148–149**, *E. gruveli*: holotype of *Glyphostoma gruveli*, ISNB colln, 7,1 × 3,1 mm; photographs courtesy of W. Sleurs. **150–151**, *E. bisacchii*: holotype of *Mangilia bisacchii*, MCSN colln, 5,5 × 2,4 mm.

opisthocline, shallowly arcuate, gently sigmoid on body whorl, reaching almost to base, in t/s roundedly angular, slightly narrower than intervals; 11 on 1st whorl, barely 12 on penultimate one. Spiral lirae 7 on penultimate whorl, main ones thin, low and much narrower than intervals, none forming a distinct peripheral angle; 1st whorl with 8 thin, close spiral threads, covering entire whorl, crossed by collabral threads; interstices with fine spiral threads (4–6 per interval on penultimate whorl), crossed by subequal collabral threads, forming microgranules, suture with a feebly granular border. Protoconch narrowly conical, of about 2 whorls [but slightly worn], traces of arcuate axial plicules near termination. Colour off-white, with two orange-brown lines on shoulder slope, underside of body whorl with a median blotch of orange-brown, and base of outer lip with a deep orange-brown blotch, extending up edge of lip. Dimensions: 7,1 × 3,1 mm.

Notes on species: *E. gruveli* is superficially similar to the Hawaiian *Eucithara pusilla* (Pease, 1860), as figured by Kay (1979: fig. 116c). However, in *gruveli* the spiral lirae are narrower than their intervals, which bear a granose-cancellate microsculpture, whereas in *pusilla* (according to NMSA examples from off Oahu) the spiral lirae are relatively broad and closely-set, and their narrow interstices bear only faint collabral threads. There is also considerable resemblance to *E. hirasei* (Pilsbry, 1904), from Japan (according to a topotype from Hirado, Hizen, in the Dautzenberg collection), but in shape it is less biconical and the whorls are less angular.

Eucithara bisacchii (Hornung & Mermod, 1928)

Figs 150–151

Mangilia bisacchii Hornung & Mermod, 1928: 111, text fig. Type locality: Assab, Ethiopia.

Type material: Holotype in the Museo Civico di Storia Naturale 'Giacomo Doria'; 5,0 × 2,4 mm, a bleached and slightly chalky shell, with worn protoconch.

Notes on holotype: Axial ribs strongly crenulating suture, but scarcely coronate; ribs 11 per whorl, in t/s rounded, with leading face slightly concave, trailing face gently sloping. Spiral sculpture of minute, close threads, with regularly spaced threads stronger than the others; penultimate whorl with approximately 38 threads, about 5 of which are stronger than the others. Labral teeth about 8, inner lip smooth other than for faint traces of denticles on columella. Body whorl with remnants of a brown subsutural band.

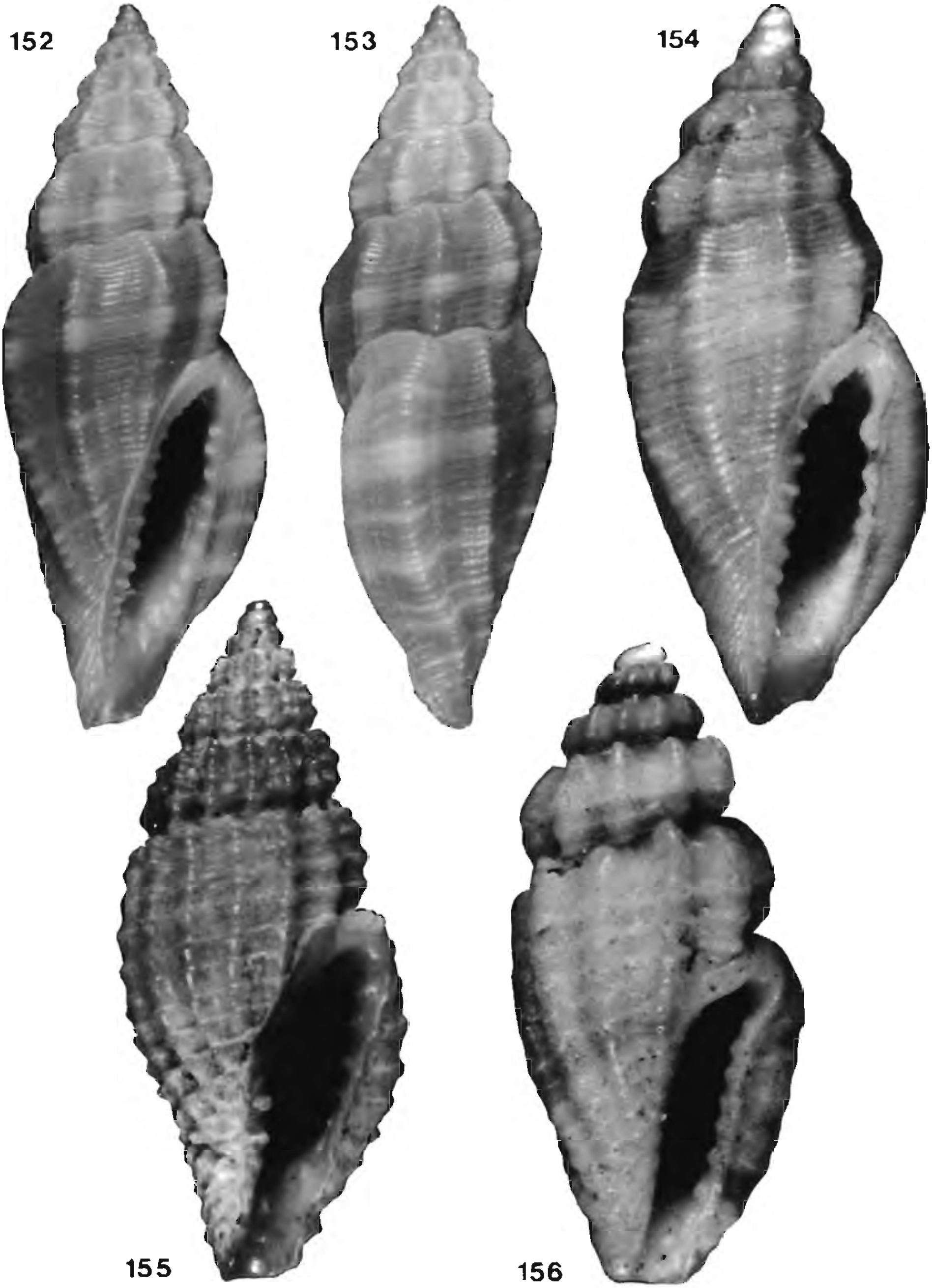
Eucithara cinnamomea (Hinds, 1843)

Figs 152–153

Mangelia cinnamomea Hinds, 1843: 45; *idem*, 1844: 25, pl. 9, fig. 1. Type locality: 'North coast of New Guinea; Straits of Macassar; Straits of Malacca. From five to twenty-two fathoms; mud.'

Not: *Eucithara cinnamomea* (Hinds, 1843); Cernohorsky, 1978: 155, fig. 10 [= *Citharomangelia* sp].

Nor: *Mangilia cinnamomea peraffinis* Pilsbry, 1904: 10, pl. 2, figs 12, 12a [= *Citharomangelia richardi* (Crosse, 1872)].



Figs 152–156. *Eucithara cinnamomea* (Hinds, 1843), *E. typica* (Smith, 1884), *E. bathyraphe* (Smith, 1882) and *E. cazioti* (Preston, 1905). **152–153**, *E. cinnamomea*: lectotype of *Mangelia cinnamomea*, BMNH 1879.2.26.90, 9,3 × 3,5 mm. **154**, *E. typica*: lectotype of *Cithara typica*, BMNH colln, 4,7 × 1,9 mm. **155**, *E. bathyraphe*: holotype of *Pleurotoma (Glyphostoma?) bathyraphe*, BMNH 1964222, 5,5 × 2,3 mm. **156**, *E. cazioti*: holotype of *Mangilia (Glyphostoma) cazioti*, BMNH 1905.10.4.71, 5,4 × 2,4 mm.

Type material: Only one syntype traced, BMNH 1879.2.26.90, J. Lombe-Taylor colln. *ex* Belcher colln, 'N. of New Guinea', dimensions 9,3 × 3,5 mm; here designated lectotype.

Notes on lectotype: Whorls initially with a slight inframedian angle, succeeding whorls convex, with periphery more or less median; slightly adpressed against preceding whorl, suture strongly undulant. Axial ribs strong, slightly sinuous and opisthocline, in t/s compressed with angular crests, leading slope of each rib slightly concave, ribs much narrower than their rather flattened intervals; 10 ribs on 1st teleoconch whorl, 8 on penultimate, 7 (plus varix) on last. Spiral lirae close, rather tabulate, about 7 on 1st whorl, 3rd lira from base forming a slight keel up until 3rd whorl, lirae more or less uniform in strength on remaining 2,5 teleoconch whorls; penultimate whorl with about 20 lirae, base of body whorl with about 34; no distinct interstitial sculpture, but sutural border weakly micropliculate. Inner lip with 17 transverse plicae, strongest medially, becoming more tuberculate anteriorly; on central columella divided shallowly by a longitudinal interruption to form an internal series of about 7 nodules. Protoconch of about 2,5 whorls, all except initial whorl with thin but conspicuous, arcuate axial riblets, about 20 on last whorl where they are more opisthocline than elsewhere; breadth approximately 0,5 mm. Uniform orange-brown, with a narrow pale spiral zone, restricted to the axial ribs, below periphery on spire whorls, base of body whorl with an additional 5 pale spiral lines, each of which are continuous and the width of a single spiral lira.

Eucithara typica (E. A. Smith, 1884)

Fig. 154

Cithara typica E. A. Smith, 1884a: 328. Type locality unknown.

Type material: Three syntypes BMNH, no accession number, *ex* H. Cuming colln. Freshest type here designated as lectotype, dimensions 4,7 × 1,9 mm.

Notes on syntypes: Axial ribs rounded in t/s, 9–10 on penultimate whorl; spiral lirae 12 on penultimate whorl, plus a few, fine, close spiral threads in each interval, often a single intermediary with a weaker one on either side. Outer lip with 8 denticles, the posteriormost the strongest. Columella with 7–8 strong plicae (internally forming a fossula of 4–5 denticles) and 2–3 smaller plicae on paries. White with very faint spiral bands of yellowish. Largest syntype 5,8 x 2,9 mm.

Notes on species: Closely allied to *cinnamomea*, but spiral lirae stronger and apertural denticles much fewer and stronger.

Eucithara bathyraphe (E. A. Smith, 1882)

Fig. 155

Pleurotoma (Glyphostoma?) bathyraphe E. A. Smith, 1882: 305. Type locality: San Nicolas, Zebu, Philippines, 10 fathoms.

Type material: Holotype BMNH 1964222, *ex* H. Cuming colln.

Notes on holotype: Sculpture nodose-cancellate, slightly coronate at suture. Axial ribs straight, orthocline to slightly prosocline, reaching rostrum, asymmetrically rounded in t/s, slightly compressed; 12 ribs on 1st whorl, 13 on penultimate one. Spiral cords strong, widely-spaced, no intermediaries; 3 lirae on 1st whorl, 5 cords on penultimate whorl, 11 on base of body whorl, becoming weak on rostrum. Traces of microscopic collabral threads. Inner lip with 6 widely-spaced, strong plicae; outer lip with 7 small plicae. Protoconch conical, of about 2,5 whorls, initially smooth, then with arcuate, opisthocline riblets. Dimensions: 5,5 × 2,3 mm.

Notes on species: The generic position of this species is somewhat doubtful.

Eucithara cazioti (Preston, 1905)

Fig. 156

Mangilia (Glyphostoma) cazioti Preston, 1905: 2, pl. 1, fig. 5. Type locality: Ceylon.

Type material: Holotype BMNH 1905.10.4.71, a slightly worn shell, lacking protoconch.

Notes on holotype: Suture with somewhat channelled appearance. Axial ribs in t/s slightly angularly rounded and somewhat asymmetrical, equal to intervals in width, straight, slightly opisthocline, reaching top of rostrum, 11 on 1st whorl, 10 on penultimate one. Spiral lirae moderately strong, 4 on penultimate whorl, plus fine, dense spiral and collabral threads; base of body whorl with 8 main spiral lirae plus fine ones on rostrum. Inner lip with about 8 small denticles towards outer edge; outer lip with 7 low, rounded teeth. Ground colour pale, subsuturally suffused with orange-brown, with a band of the same colour around base of body whorl, and two behind lip; apex tinged with brown. Dimensions: 5,4 × 2,4 mm.

Eucithara vittata (Hinds, 1843)

Figs 157–159

Mangelia vittata Hinds, 1843: 45; *idem*, 1844: 26, pl. 9, fig. 3. Type locality: 'Straits of Macassar. From ten fathoms; coarse sand.'

Mangelia abyssicola Reeve, 1846a: pl. 5, sp. 30; *idem*, 1846b: 62. Type locality: 'Island of Mindanao, Philippines (found in sandy mud at the depth of twenty five fathoms)'. **Syn. n.**

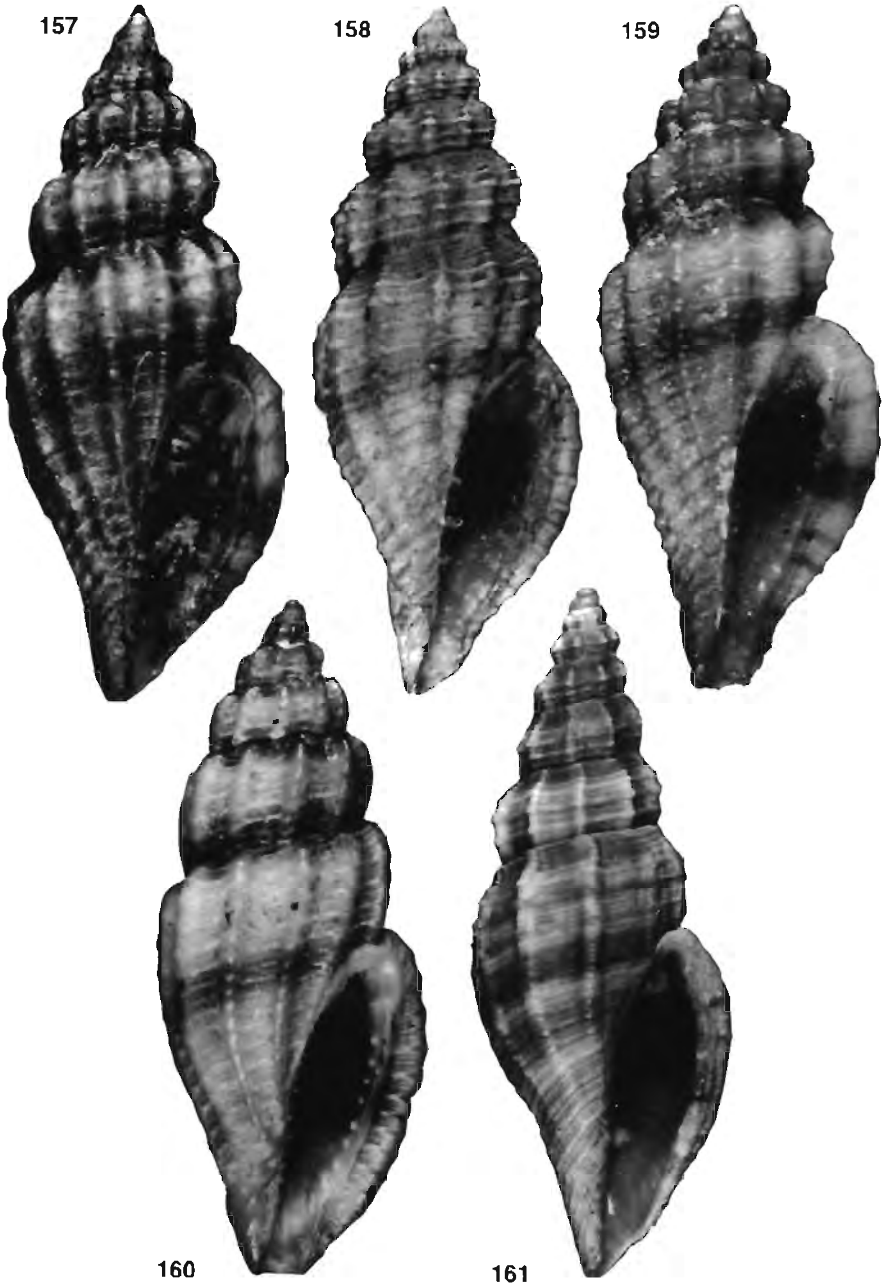
Eucithara abyssicola; Cernohorsky, 1978: 154, pl. 55, fig. 3.

Pleurotoma (Glyphostoma?) rubrocincta E. A. Smith, 1882: 305. Type locality: Ovalan, Fiji Islands, 12 fathoms. **Syn. n.**

Not: *Mangilia vittata* Hinds, 1843; Reeve, 1846a: pl. 7, sp. 53, pl. 8, sp. 65 [= *Pleurotoma (Glyphostoma?) exquisita* E. A. Smith, 1882].

Type material: Holotype of *M. vittata* BMNH 1879.2.26.92 (Fig. 157). One of three specimens of *M. abyssicola* in BMNH (not accessioned) is labelled 'The type'; this example is here designated as lectotype (Fig. 158), dimensions 8,0 × 3,0 mm.

Although three specimens of *P. rubrocincta* in the BMNH collection are labelled as syntypes, it would appear that only the adult shell (accession no. 56.13.27.95) from 12 fathoms has type [= holotype] status (Fig. 159). The remaining immature examples (accession no. 59.1.14.30) are labelled as coming



Figs 157–161. *Eucithara vittata* (Hinds, 1843), *E. interstriata* (Smith, 1876) and *Cytharopsis exquisita* (E. A. Smith, 1882). **157–159**, *E. vittata*: **157**, holotype of *Mangelia vittata* Hinds, 1843, BMNH 1879.2.26.92, 7,8 × 3,1 mm; **158**, lectotype of *Mangelia abyssicola* Reeve, 1846, BMNH colln., 8,0 × 3,0 mm; **159**, holotype of *Pleurotoma rubrocincta* Smith, 1882, BMNH 56.13.27.95, 6,5 × 2,6 mm. **160**, *E. interstriata*: holotype of *Cythara interstriata*, BMNH 1876.1.10.37, 7,8 × 3,1 mm. **161**, *Cytharopsis exquisita*, holotype of *Pleurotoma (Glyphostoma?) exquisita*, BMNH 196435, Luzon, Philippines, ex H. Cuming, 9,8 × 3,2 mm.

from 10 fathoms, a depth not mentioned in the original description. The label adds that all three were collected on mud, by the Admiralty.

Descriptive notes (based on above types): Axial ribs rounded in t/s, with sloping sides, more or less equal in width to intervals, 12–13 on penultimate whorl. Main spiral lirae high and well-spaced, 4–5 on penultimate whorl, plus 2–5 weaker, closer lirae below suture; interstices with faint spiral threads; sutural border prickly. Inner lip with 8–10 strong pleats on outer edge (including 2 on paries), sometimes merely pustules; outer lip with 8 distinct denticles. Protoconch conical, of just under 3 whorls, axially ribbed from 2nd, last whorl with about 20 ribs. Dimensions: 7,8 × 3,1 mm (*vittata*), 8,0 × 3,0 mm (*abyssicola*), 6,5 × 2,6 mm (*rubrocincta*).

Notes: After examining the respective types, I am unable to find sufficient grounds on which to distinguish *vittata*, *abyssicola* and *rubrocincta*. Another synonym may be *Mangelia fasciata* Gray in Reeve (1846a: pl. 7, sp. 52) from 'Africa'; E. A. Smith (M/S annotations to Reeve's monograph) noted the presence of a doubtful type in the BMNH collection, but this cannot now be traced. Another synonym may be *Pleurotoma (Cithara) biclathrata* Souverbie, 1872, from New Caledonia, but I have not seen type material (probably in the Bordeaux Museum).

Pleurotoma (Glyphostoma?) exquisita E. A. Smith, 1882, belongs to the possibly daphnelline genus *Cytharopsis* A. Adams, 1865, and will be discussed elsewhere; a photograph of the holotype is given here (Fig. 161) for comparison.

Eucithara interstriata (E. A. Smith, 1876), **stat. rev.**

Fig. 160

Cythara interstriata E. A. Smith, 1876: 538, pl. 30, fig. 11. Type locality: San Christoval, Solomon Islands.

Type material: Holotype BMNH 1876.1.10.37.

Notes on holotype: Axial ribs rather straight, opisthocline, in t/s strongly compressed, with rounded crests, narrower than intervals, 10 per whorl. Main spiral lirae 7 on penultimate whorl, each interval with 3–4 fine intermediaries. Inner lip with about 11 plicae (plus some pustules), those on paries finer; interior of outer lip with 10 plicae, posterior one strongest. Dimensions 7,8 × 3,1 mm.

Notes on species: Although this species was synonymised by Cernohorsky (1978) with *E. abyssicola* [= *E. vittata* (Hinds, 1843)], it appears to differ in its broader base, finer plication on the inner lip, axial ribs that rise slightly below the suture, and its protoconch of only two whorls.

Eucithara gracilis (Reeve, 1846)

Fig. 162

Mangelia gracilis Reeve, 1846a: pl. 2, sp. 11; *idem*, 1846b: 60. Type locality: Island of Ticao, Philippines (found under stones at low water).
Eucithara gracilis; Hedley, 1922: 267 (references); Cernohorsky, 1978: 155, pl. 55, fig. 10.

Type material: Two specimens labelled as syntypes, BMNH 1963453; the larger one (12,9 × 4,1 mm) is probably that figured in Reeve's fig. 11a, and is here designated lectotype (Fig. 162); the smaller, however, does not appear to be Reeve's fig. 11b, as the brown markings on the body whorl do not correspond.

Notes on syntypes: Axial ribs in t/s compressed, roundedly angular, slopes asymmetrical (leading face slightly concave), narrower than intervals, straight, opisthocline, extending from suture to rostrum, 10–11 on penultimate whorl. Spiral threads fine, some stronger than others, becoming relatively high and coarse on base of body whorl. Columella pleats low and irregular, outer lip with 10–13 weak plicae.

Eucithara typhonata (Melvill & Standen, 1901)

Fig. 163

Cythara typhonata Melvill & Standen, 1901: 446, pl. 24. fig. 12; Trew, 1987: 69. Type locality: Tumb Island, Persian Gulf, 17 fathoms.

Type material: Holotype BMNH 1901.12.9.59.

Notes on holotype: The juvenile nature of the holotype prevents any conclusion as to its validity. Its narrow form and large size (length 13,0 mm) distinguish it from *E. coronata*.

Eucithara vitiensis (E. A. Smith, 1884)

Fig. 164

Cythara vitiensis E. A. Smith, 1884a: 326. Type locality: Totoya, Fiji.

Type material: Holotype BMNH 1856.9.24.86, collected by the British Admiralty.

Notes on holotype: Axial ribs somewhat coronated, but intervening foveolations shallow; ribs opisthocline, almost straight, rounded in t/s, wider than intervals; 12 on 1st whorl, 11 on penultimate one; spiral threads very fine, close and even. Outer lip with 11 short plicae, inner lip with two tiny pustules at each end. Dimensions: 11,2 × 4,3 mm.

Eucithara tenebrosa (Reeve, 1846)

Fig. 165

Mangelia tenebrosa Reeve, 1846a: pl. 4, sp. 26; *idem*, 1846b: 62. Type locality: 'Cagayan, Island of Mindanao [Philippines] (found in sandy mud at the depth of twenty-five fathoms)'.

Type material: Holotype BMNH 1963445, *ex* H. Cuming colln.

Notes on holotype: Axial ribs orthocline, almost straight, projecting slightly above suture, 10 per whorl; spiral threads fine, slightly irregular in strength, pliculated by very fine collabral threads. Outer lip with 14 plicae, inner lip with about 18 (plus a few intermediaries), with a fossula of 6 denticles. Uniform orange-brown. Dimensions: 13,7 × 5,6 mm.

Note on species: Somewhat narrower than members of the *E. coronata* complex, and provisionally regarded as valid.

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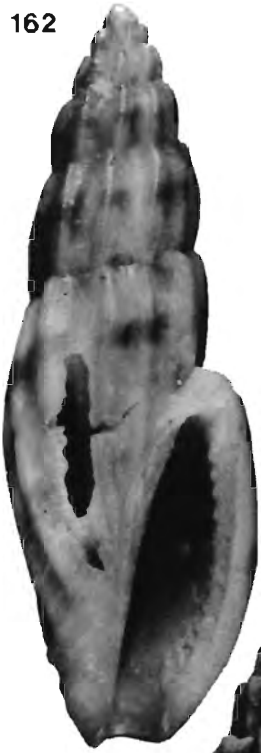

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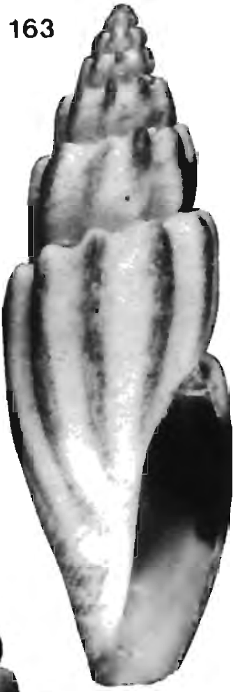

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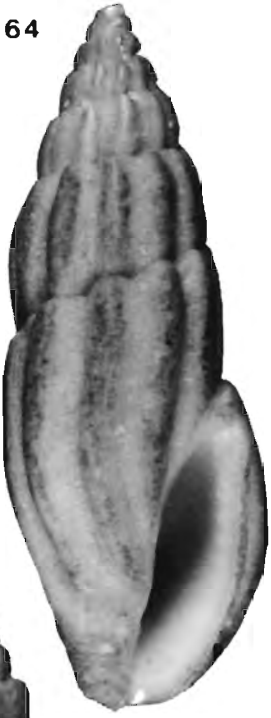

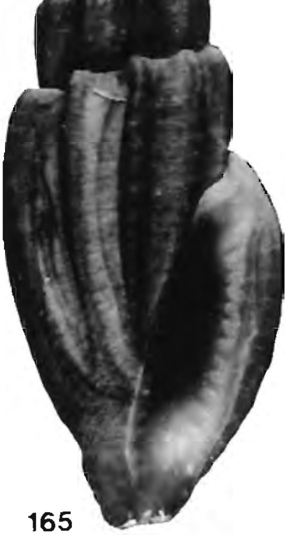

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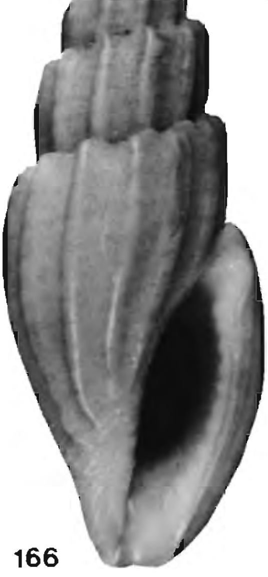

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Figs 162–166. *Eucithara gracilis* (Reeve, 1846), *E. typhonata* (Melvill & Standen, 1901), *E. vitiensis* (Smith, 1884), *E. tenebrosa* (Reeve, 1846) and *E. turricula* (Reeve, 1846). **162**, *E. gracilis*: lectotype of *Mangelia gracilis*, BMNH 1963453, 12,9 × 4,1 mm. **163**, *E. typhonata*: holotype of *Cythara typhonata*, BMNH 1901.12.9.59, 13,0 × 4,4 mm. **164**, *E. vitiensis*: holotype of *Cythara vitiensis*, BMNH 1856.9.24.86, 11,2 × 4,3 mm. **165**, *E. tenebrosa*: holotype of *Mangelia tenebrosa*, BMNH 1963445, 13,7 × 5,6 mm. **166**, *E. turricula*: holotype of *Mangelia turricula*, BMNH 1963458, 12,5 × 4,7 mm.

Eucithara turricula (Reeve, 1846)

Fig. 166

Mangelia turricula Reeve, 1846a: pl. 4, sp. 23; *idem*, 1846b: 62. Type locality: 'Island of Ticao, Philippines (found on the sand)'.

Type material: A specimen accessioned as BMNH 1963458, *ex* H. Cuming colln, is labelled as holotype. This specimen does not agree well with Reeve's figure, which shows a shell with shallow, non-coronated suture and lower spire. Nevertheless, Reeve himself contradicted his figure by referring to its suture as 'deep'. The conflict can probably be ascribed to indifferent engraving, of which a number of instances occur in Reeve's *Mangelia* monograph.

Notes on holotype: Axial ribs 10 on 1st whorl, 11 on penultimate whorl; spiral threads fine and even. Outer lip with 12 small plicae, columella with faint transverse ridges. White with faint spiral lines of yellow visible behind the lip, and a dorsal band of buff on body whorl. Dimensions: 12,5 × 4,7 mm.

Eucithara angiostoma (Pease, 1868)

Fig. 167

Pleurotoma triticea (*non* Kiener, 1840); Reeve, 1843: pl. 16, sp. 128.
Cythara angiostoma Pease, 1868: 105 (*nom. subst.*). Type locality: Polynesia.
Not: *Eucithara angiostoma*; Kay, 1979: 352, figs 114 E, 116 B.

Type material: Five possible syntypes are registered as BMNH 1989132. Their type status is somewhat doubtful, as there is no indication that they originated from the Stainforth collection (the source cited by Reeve); moreover the tablet bears the locality 'Polynesia', whereas Reeve merely repeated Kiener's locality of 'Indian Ocean'. However, one specimen closely matches the illustrated dorsal view, and the identity of the material with Reeve's species appears beyond doubt. The locality may have been added after publication of Pease's note, in which he referred to it as a 'Polynesian form'.

Notes on possible type material: Apex worn in all; outer lip with 10 denticles, absent in some, parietal region with faint transverse ridges. Axial ribs opisthocline, almost straight, arcuate on body whorl, weakly coronating suture (but without intervening pits), reaching upper part of rostrum; 10 per whorl. Spiral threads fine, of 3 orders of strength. White, body whorl with a faint brown dorsal blotch and 2–3 lines across outer lip. 9,1 × 3,9 mm.

Notes on taxon: Although the name *angiostoma* was proposed as a replacement name for the species misidentified as *triticea* by Reeve, it is likely that Pease had a different species in mind. Certainly his reference to the inner lip as 'strongly corrugate' does not fit the apparent syntypes. Kay's interpretation of *angiostoma* differs widely from the syntypes, and its lack of columellar plicae indicates it to be a species differing also from Pease's concept.

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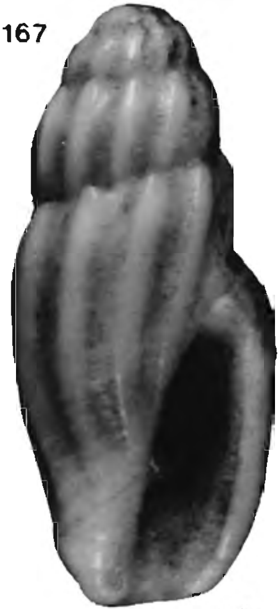

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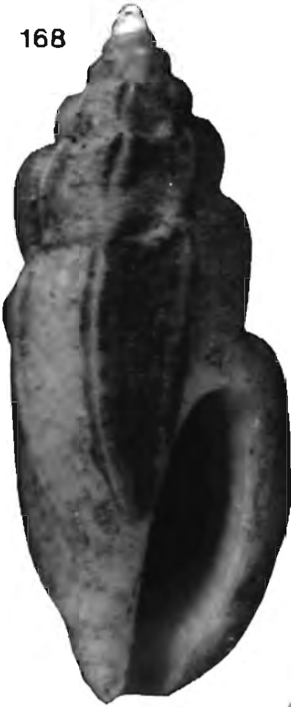

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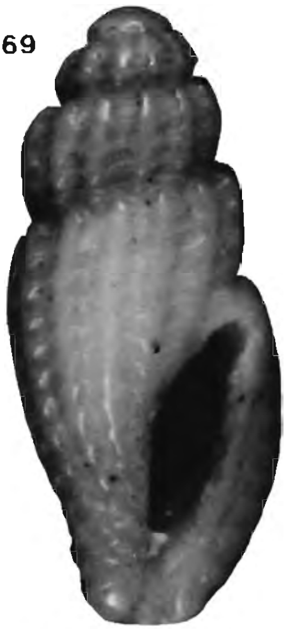

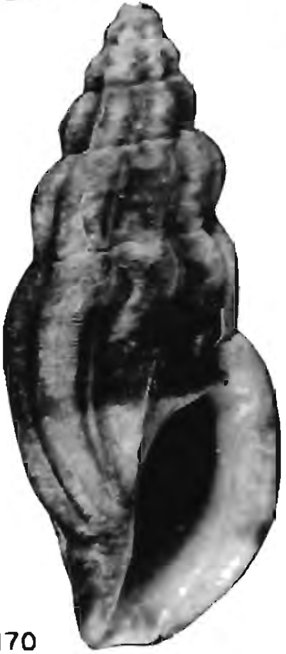

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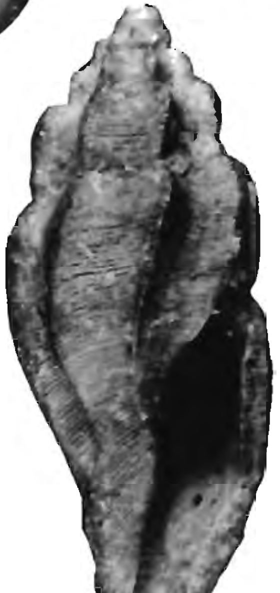

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Figs 167–171. *Eucithara angiostoma* Pease, 1868, *E. compressicosta* (Boettger, 1895), *E. gradata* (G. & H. Nevill, 1875), *E(?). grata* (Smith, 1884) and '*E. nana* (Reeve, 1846)'. **167**, *E. angiostoma*: possible syntype, BMNH 1989132, labelled as *Pleurotoma triticea* Reeve, 1843 (*non* Kiener, 1840), 9,1 × 3,9 mm. **168**, *E. compressicosta*: lectotype of *Cithara compressicosta*, SMFD 225151/1, 8,2 × 3,4 mm; negative courtesy of Dr R. Janssen. **169**, *E. gradata*: syntype of *Cythara gradata*, BMNH 1904.9.26.12–13, 5,7 × 2,5 mm. **170**, *E(?). grata*: lectotype of *Pleurotoma (Mangilia) grata*, BMNH 1963812, 6,7 × 2,8 mm. **171**, '*E. nana*': Supposed holotype of *Mangelia nana*, BMNH colln., 5,3 × 2,2 mm.

Eucithara compressicosta (Boettger, 1895)

Fig. 168

Cithara (Cithara) compressicosta Boettger, 1895: 42. Type locality: Siquijor and Ulugan, Paragua, Philippines; Omata-Merizo and Retillan, Guajan, Mariana Is.

Type material: Lectotype, here designated, SMFD 225151/1, Siquijor, dimensions 8,2 × 3,4 mm.

Notes: Through the courtesy of Dr R. Janssen, this species is here illustrated for the first time.

Eucithara gradata (G. & H. Nevill, 1875)

Fig. 169

Cythara gradata G. & H. Nevill, 1875: 93, pl. 7, fig. 15. Type locality: Balapiti, Ceylon, and Bombay, India.

Cythara gradata; Melvill, 1917: 180.

Type material: Two syntypes registered as BMNH 1904.9.26.12–13, only one very worn one now remaining in box; dimensions 5,7 × 2,5 mm.

Notes on syntype: Axial ribs 13 on penultimate whorl, in t/s rounded with slightly concave leading face; spiral lirae thin, fairly elevated, 6 on penultimate whorl; interstices forming oblique, rounded pits, microshagreened by collabral and spiral striae. Outer lip with 6 denticles plus a few anterior wrinkles; columella smooth except for a slight parietal nodule.

Eucithara(?) grata (E. A. Smith, 1884)

Fig. 170

Pleurotoma (Mangilia) grata E. A. Smith, 1884a: 320. Type locality unknown.

Type material: Two syntypes BMNH 1963812, *ex* H. Cuming colln, lectotype here designated and figured, dimensions 6,7 × 2,8 mm.

Notes on syntypes: Smith's description is adequate. Axial ribs strongly procurved below suture; spiral threads fine and even; no apertural dentition other than a blunt denticle below anal sinus and traces of a parietal pad. Dimensions: 6,7 × 2,8 mm.

This species is very doubtfully referred to the genus *Eucithara*.

Eucithara (?)nana Reeve, 1846

Fig. 171

Mangelia nana Reeve, 1846a: pl. 6, sp. 71; *idem*, 1846b: 65. Type locality: Island of Mindanao, Philippines (found in sandy mud at the depth of twenty five fathoms).

Type material: Probably lost. A shell in the BMNH collection (no accession number) is labelled as 'The type', but differs much in appearance from the original figure (which shows greater resemblance to the genus *Leiocithara*). Some notes on the purported type are nevertheless given below. This measures 5,3 × 2,2 mm, consists of about 4 teleoconch whorls (plus a remnant of the protoconch), has a juvenile lip and is possibly slightly malformed.

Notes: Axial ribs continuous on last 3 whorls, so that they do not form coronations; ribs rather straight, although strongly protractive below suture, in t/s rather angular, with steeply sloping sides, more or less equal in width to intervals, 9 on 1st, 8 on penultimate whorl. Spiral threads fine, uniform, close, crisp, 29 on penultimate whorl. No apertural features have been developed.

Gingicithara cylindrica (Reeve, 1846) **comb. n.**

Figs 172–173

Mangelia cylindrica Reeve, 1846a: pl. 2, sp. 9; *idem*, 1946b: 60. Type locality: Cagayan, Island of Mindanao, Philippines (found in sandy mud at the depth of twenty-five fathoms).
Eucithara cylindrica; Hedley, 1922: 266 (references).

Type material: Two syntypes of M. *cylindrica* are registered as BMNH 1989143; one, measuring 10,0 × 3,5 mm, is designated as lectotype.

Notes: This species is discussed above under *G. lyrica* (Reeve, 1846).

Gingicithara pessulata (Reeve, 1846), **comb. n.**

Fig. 174

Mangelia pessulata Reeve, 1846a: pl. 6, fig. 38; *idem*, 1846b: 63. Type locality: Philippine Islands.
Rhaphitoma [sic] pessulata; Boettger, 1905: 62.

Type material: Holotype, BMNH 1963451, *ex* H. Cuming colln.

Notes on holotype: Although Tomlin (1934: 41) synonymised *pessulata* with *G. cylindrica* (Reeve, 1846), this needs confirmation: the wider base of the holotype of *pessulata* renders the body whorl more cylindrical than in *cylindrica*, and the axial ribs coronate the suture more strongly (particularly on early whorls), conveying to the suture a more foveolate appearance. The entire *cylindrica-lyrica-pessulata-albivestis* complex needs revision from good series of fresh specimens.

Gingicithara ponderosa (Reeve, 1846), **comb. n.**

Fig. 175

Mangelia ponderosa Reeve, 1846a: pl. 6, sp. 44. Type locality: Island of Burias, Philippines (found among coarse sand at the depth of seven fathoms).
'c.f. *Eucithara pulchella*' (*non* Reeve, 1846); Springsteen & Leobrera, 1986: 280. pl. 80. fig. 9.

Type material: Holotype BMNH 1963461, *ex* H. Cuming colln.

Notes on holotype: Whorls with slight concavity at about 0,3 distance below suture. Axial ribs low and gently rounded in t/s, only slightly narrower than intervals, extending from suture onto upper part of rostrum, arcuate and slightly opisthocline (somewhat sigmoid on body whorl), 21 on penultimate whorl; bear low, transverse nodules where crossed by spiral lirae. Spiral lirae flattened, intervals below shoulder concavity each with a thin intermediary; 12 main spirals on penultimate whorl, plus about 28 on base of body whorl, where become more elevated; crossed by microscopic collabral threads. Outer lip with 21 short plicae, indistinct on inner lip. Dimensions: 13,5 × 5,6 mm.

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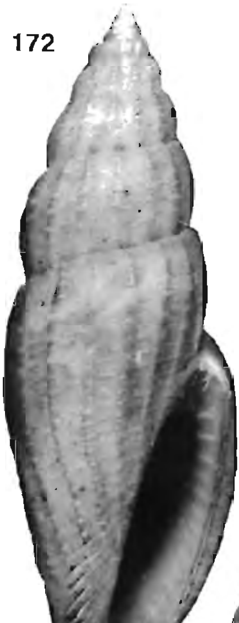

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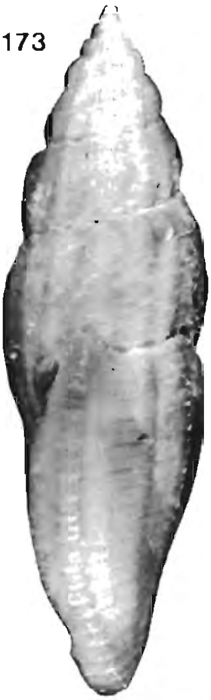

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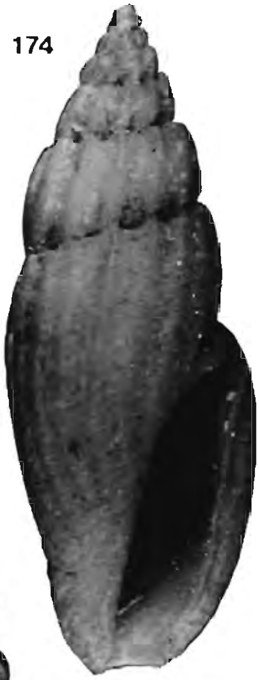

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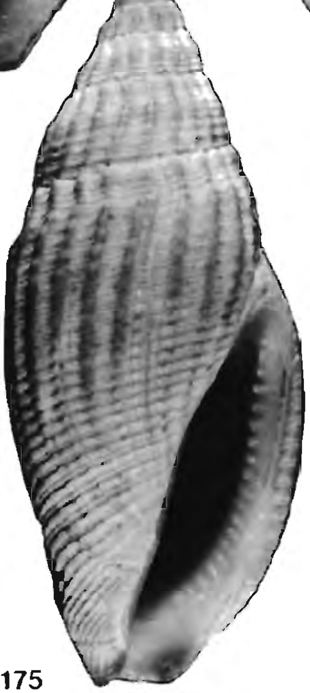

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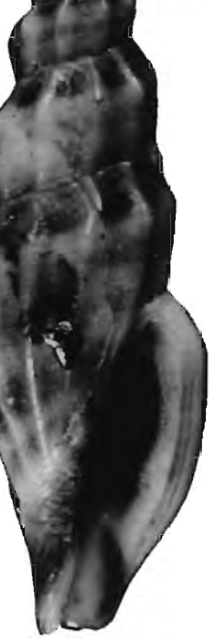


Figs 172–176. *Gingicithara cylindrica* (Reeve, 1846), *G. pessulata* (Reeve 1846), *G. ponderosa* (Reeve, 1846) and *Citharomangelia townsendi* (Sowerby, 1895). **172–173**, *G. cylindrica*: lectotype of *Mangelia cylindrica*, BMNH 1989143, 10,0 × 3,5 mm. **174**, *G. pessulata*: holotype of *Mangelia pessulata*, BMNH 1963451, 9,5 × 3,5 mm. **175**, *G. ponderosa*: holotype of *Mangelia ponderosa*, BMNH 1963461, 13,5 × 5,6 mm. **176**, *Citharomangelia townsendi*: lectotype of *Mangilia townsendi*, BMNH 95.12.5.10–11, 13,4 × 4,2 mm.

Citharomangelia boakei (G. &. H. Nevill, 1869) **comb. n.**

Fig. 177

Pleurotoma (Mangelia) boakei G. & H. Nevill, 1869: 141. Type locality: Balapitiya, Ceylon.
Mangilia (Cythara) boakei [*partim*]; Tryon, 1884: 270 [but not figure].
Marita boakei; Trew, 1991: 38.

Type material: Two syntypes BMNH 1904.9.26.34-5, both worn and damaged, three syntypes NMWC 1955.158.1500 (Trew 1991). Other syntypes presumably in Indian Museum, Calcutta.

Notes on BMNH types: Whorls evenly convex; axial ribs 11–12 on penultimate whorl, not procurved below sutures, on body whorl extending to upper part of rostrum; weak, close spiral threads visible between ribs; columella with traces of transverse plicae; outer lip with 13 denticles, anteriorly plicate, posterior denticle the largest.

Note on species: Tryon synonymised here *Mangelia bicinctula* G. & H. Nevill, 1871, from Ceylon, and *Cithara bella* Adams & Angas, 1863, from South Australia. The former appears to be at least congeneric with *boakei*, but the latter belongs to the genus *Marita* Hedley, 1922.

Citharomangelia townsendi (Sowerby, 1895) **comb. n.**

Fig. 176

Mangilia townsendi Sowerby, 1895: 278, pl. 18, figs. 1–2; Melvill, 1917: 178; Powell, 1966: 97. Type locality: Mekran coast.

Type material: Three syntypes in BMNH, 2 from Mekran coast (one marked with a red dot here designated lectotype) BMNH 95.12.5.10–11, one small syntype from Karachi BMNH 98.6.15.4.

Citharomangelia galigensis (Melvill, 1899) **comb. n.**

Fig. 178

Mangilia galigensis Melvill, 1899: 86, pl. 1, fig. 4; *idem*, 1917: 170; Trew, 1987: 42. Type locality: Galig Island, Persian Gulf.

Type material: Holotype BMNH 1899.12.18.44, *leg.* Townsend, immature.

Notes on holotype: see comments under *C. africana*.

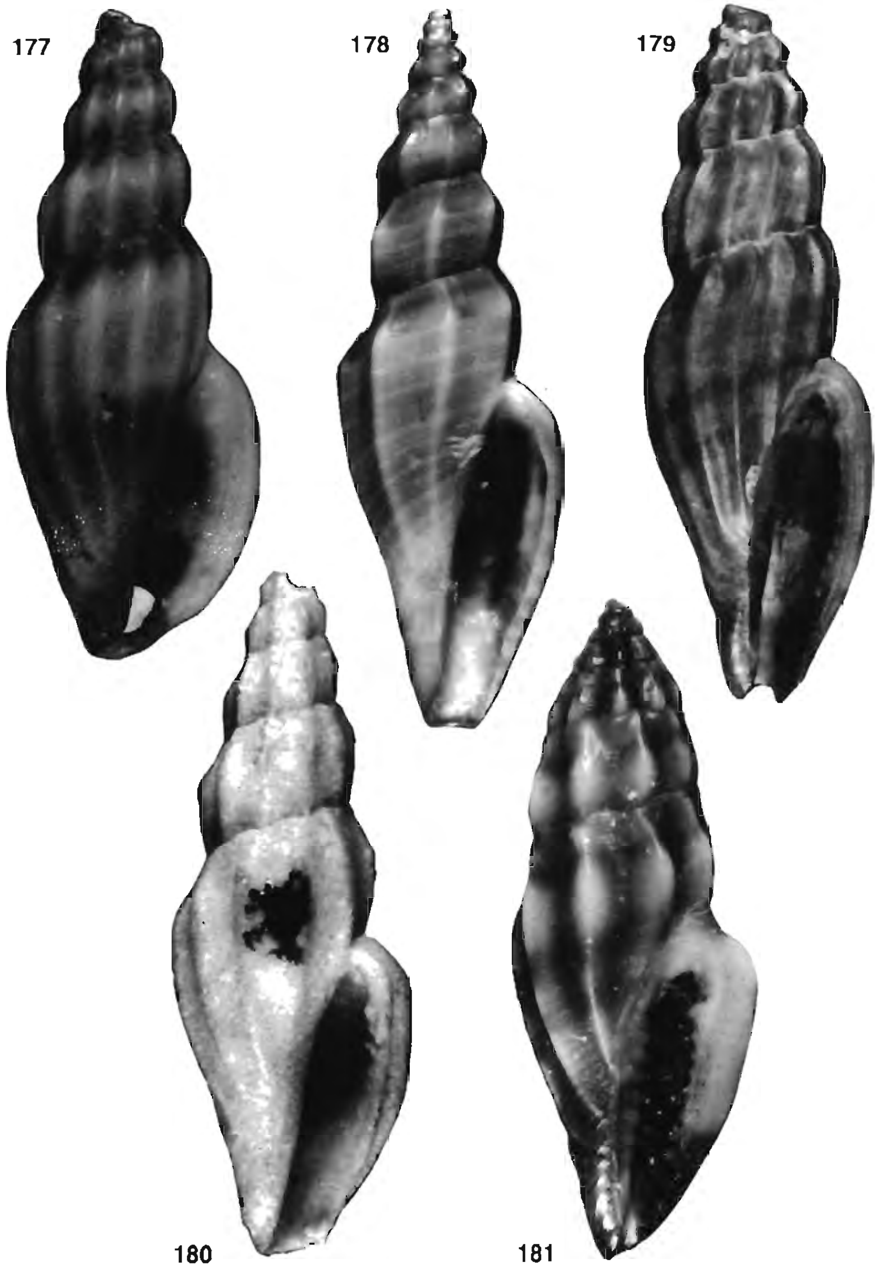
Citharomangelia denticulata (E. A. Smith, 1884) **comb. n.**

Fig. 179

Pleurotoma (Mangilia) denticulata E. A. Smith, 1884a: 319. Type locality: Mauritius.

Type material: Holotype BMNH 1874.1.19.94, *ex* R. McAndrew; specimen lacking apex.

Notes on holotype: Axial ribs 12 on penultimate whorl, in t/s leading face concave, other side convex; spiral sculpture very faint; outer lip with 9 small denticles, columella with only faint traces of denticles. Dimensions: 8,2 × 2,7 mm.



Figs 177–181. *Citharomangelia boakei* (G. & H. Nevill, 1869), *C. galigensis* (Melvill, 1899), *C. denticulata* (E. A. Smith, 1884), *C. elevata* (E. A. Smith, 1884) and *C. planilabroides* (Tryon, 1884). **177**, *C. boakei*: syntype of *Pleurotoma (Mangelia) boakei*, BMNH 1904.9.26.34-35, 9,1 × 3,5 mm. **178**, *C. galigensis*: holotype of *Mangilia galigensis*, BMNH 1899.12.18.44, 14,4 × 4,3 mm. **179**, *C. denticulata*: holotype of *Pleurotoma (Mangilia) denticulata*, BMNH 1874.1.19.94, 8,2 × 2,7 mm. **180**, *C. elevata*: syntype of *Cithara elevata*, BMNH 1874.1.19.45, 12,7 × 4,8 mm. **181**, *C. planilabroides*: lectotype of *Mangelia planilabrum* Reeve, 1846 (*non* Reeve, 1843), BMNH 1963452, 8,4 × 3,1 mm.

Citharomangelia elevata (E. A. Smith, 1884) **comb. n.**

Fig. 180

Cithara elevata E. A. Smith, 1884a: 327. Type locality: Persian Gulf.
Cythara elevata; Melvill, 1917: 180.

Type material: Three specimens are accessioned as syntypes, BMNH 1874.1.19.45, *leg.* L. Pelly, don. R. MacAndrew; only two types are now present, but these include the specimen marked with a red dot by Smith. Both are very worn and lack the apex, and are consequently difficult to reconcile with Smith's description. Melvill (1917) was unable to locate these specimens.

Citharomangelia planilabroides (Tryon, 1884) **comb. n.**

Fig. 181

Mangelia planilabrum Reeve, 1846a (*non Pleurotoma planilabrum* Reeve, 1843): pl. 6, sp. 43; *idem*, 1846b: 63. Type locality: Island of Ticao, Philippines.
Mangilia planilabroides Tryon, 1884: 263, pl. 23, fig. 87 (after Reeve) *nom. subst.*

Type material: Three specimens BMNH 1963452, labelled as syntypes; one separated as 'The type' is here designated as the lectotype (Fig. 181).

Notes on lectotype: Periphery of 1st teleoconch whorl angular, later becoming rounded, except where indented by a shallow subsutural concavity. Axial ribs slightly arcuate, somewhat orthocline, angularly rounded in t/s, more or less equal to intervals, with gradually sloping sides, 11 on 1st whorl, 8 on penultimate whorl. Spiral sculpture scratch-like, stronger on early whorls and base of body whorl. Inner lip with 8 plicae, interrupted internally to form a fossula of 5 plicae. Outer lip with 8 plicae (9 in one paralectotype), posteriormost one strongest. Light brown with obscure zones of whitish (mainly visible on ribs), early part of spire tinged with dark grey, protoconch and 1st whorl or two orange-brown. Dimensions: 8,4 × 3,1 mm.

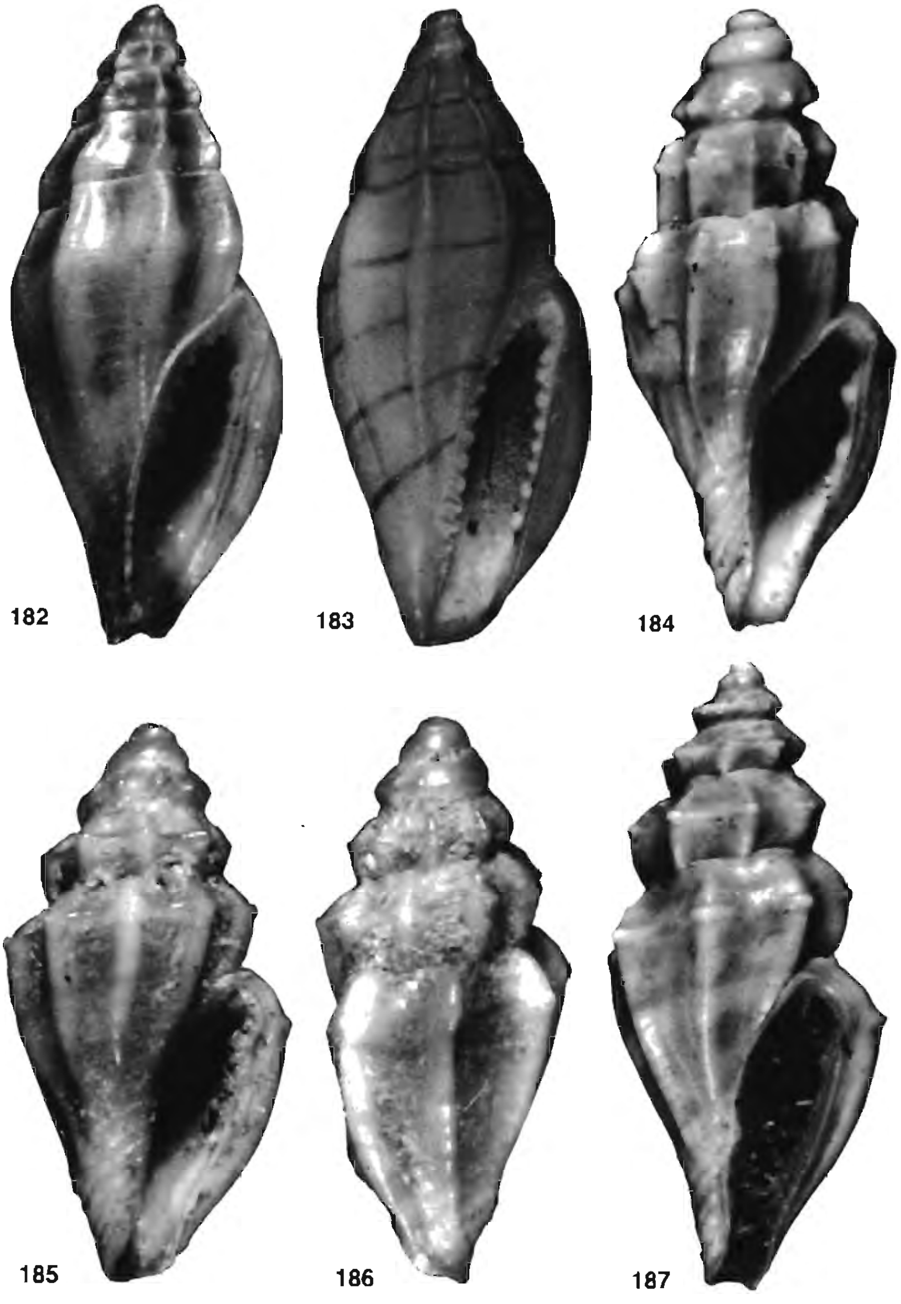
Citharomangelia pellucida (Reeve, 1846), **n.comb.**

Fig. 182

Mangelia pellucida Reeve, 1846a: pl. 8, sp. 61; idem, 1846b: 64. Type locality unknown.
Eucithara pellucida; Hedley, 1922: 270; Dautzenberg, 1929: 367.

Type material: Holotype, BMNH, no accession number, *ex* H. Cuming colln.

Notes on holotype: Surface glossy, axial ribs continuous from 2nd teleoconch whorl, opisthocline, very slightly arcuate, suture to suture, extending onto rostrum, roundedly angular in t/s, narrower than intervals, which are shallowly concave; 8 ribs on 1st whorl, 7 on penultimate one. Spiral sculpture of very shallow grooves, 11 on penultimate whorl, on rostrum forming threads. Columella with 13 strong plicae, longitudinally divided to form a fossula of 4 denticles; outer lip with 8 denticles, posterior one strongest. Pale brownish-grey, tinged below suture with brown, base orange-brown. Protoconch of 1,5 whorls, last whorl with about 23 axial ribs. Dimensions: 4,1 × 1,8 mm.



Figs 182–187. *Citharomangelia pellucida* (Reeve, 1846), *C.(?) quadrilineata* (Sowerby, 1913), *Leiocithara macrocephala* (Thiele, 1925), *L. infulata* (Hedley, 1909) and *L. angulata* (Reeve, 1846). **182**, *C. pellucida*: holotype of *Mangelia pellucida*, BMNH colln, 4,1 × 1,8 mm. **183**, *C.(?) quadrilineata*: holotype of *Cythara quadrilineata*, BMNH 1914.1.7.288, 8,0 × 3,5 mm. **184**, *L. macrocephala*: lectotype of *Mangelia macrocephala*, ZMHB colln, 3,6 × 1,6 mm. **185–186**, *L. infulata*: holotype of *Mangelia infulata*, AMSA C27435, 3,5 × 1,8 mm. **187**, *L. angulata*: lectotype of *Mangelia angulata*, BMNH colln, 4,5 × 2,0 mm.

Notes: Although the type locality was unknown, the species has been subsequently reported (although presumably without direct comparison) from Madagascar, the Philippines and Queensland.

Citharomangelia(?) quadrilineata (Sowerby, 1913)

Fig. 183

Cythara quadrilineata Sowerby, 1913: 234, pl. 3, fig. 4. Type locality: Japan.

Type material: Holotype BMNH 1914.1.7.288, *ex* Y. Hirase.

Notes on holotype: Axial ribs low and much narrower than intervals, continuous from whorl to whorl, almost straight, somewhat orthocline, 8 per whorl; no spiral sculpture visible, even on rostrum. Inner lip with 14 pleats, forming an internal fossula of 6; outer lip with 11 very short plicae. White, with a brown spiral line just below suture, 1 below periphery, and 3 on base of body whorl. Dimensions: 8,0 × 3,5 mm.

Notes: *C. quadrilineata*, with its low, continuous, cord-like axial ribs and smooth, wide intervals, does not appear to be closely comparable with any other known species, and its generic position is somewhat doubtful.

Leiocithara infulata (Hedley, 1909)

Figs 185–186

Mangelia infulata Hedley, 1909: 457, pl. 44, fig. 92. Type locality: Hope Island, Queensland, 5–10 fathoms.
Eucithara infulata; Hedley, 1922: 268.

Type material: Holotype AMS C27435. See notes under *Leiocithara perlucidula*.

Leiocithara apollinea (Melvill, 1904)

Figs 188–189

Mangilia apollinea Melvill, 1904: 166, pl. 10, fig. 20; Melvill, 1917: 167; Schepman 1913: 430; Hornung & Mermod, 1928: 109; Trew, 1987: 25. Type locality: Gulf of Oman, 24°58′N, 56°54′E, 156 fathoms.

Type material: Three syntypes BMNH 1905.7.14.59-61, plus 19 syntypes NMW 1955.158.439 (Trew 1987).

Leiocithara macrocephala (Thiele, 1925)

Fig. 184

Mangelia macrocephala Thiele, 1925: 214 (248), pl. 27 (39), fig. 2. Type locality: 0°43,2′S; 98°33,8′E, 371 m.

Type material: Four syntypes, ZMHB, *Valdivia* Stn 193. The largest (and figured) specimen is here designated as lectotype, dimensions 3,6 × 1,6 mm.

Notes: Protoconch retaining slightly over 3 whorls [evidently with a decollated first whorl], 2nd whorl with a slight basal angle that begins to overhang the suture, and on last whorl bears about 10–12 angular projections, starting as

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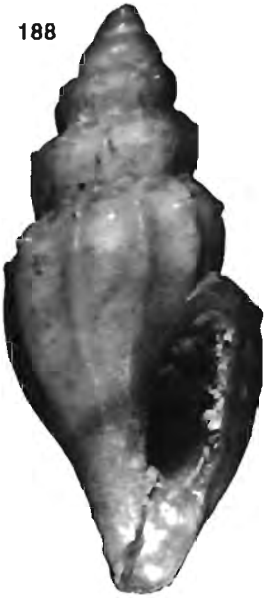
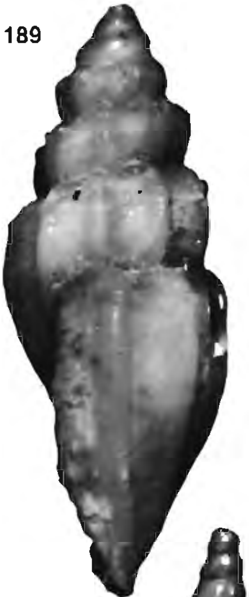
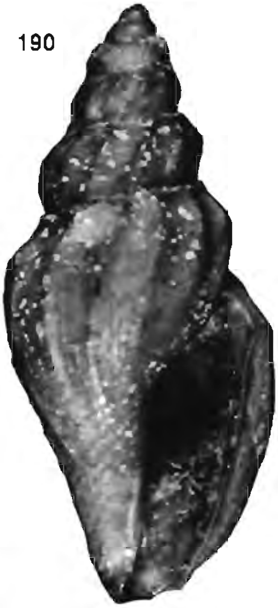
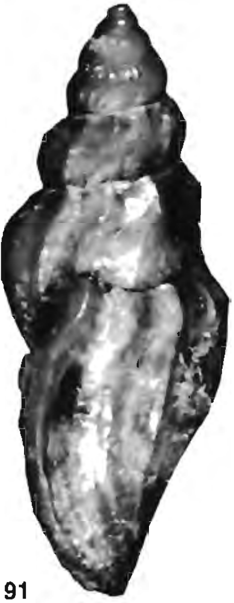


189

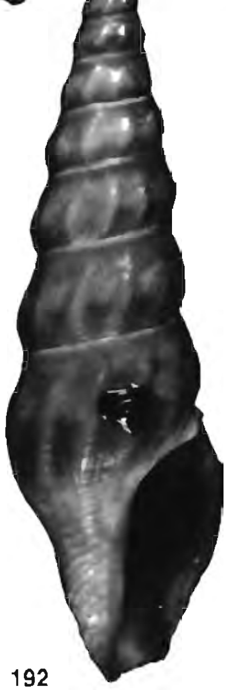


190

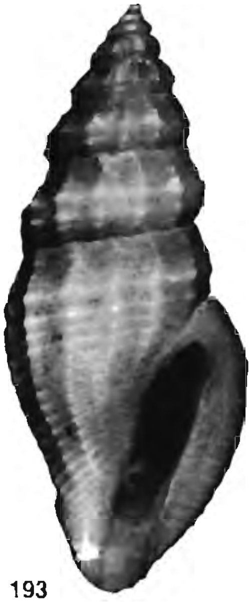




191



192



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Figs 188–193. *Leiocithara apollinea* (Melvill, 1904), *L(?). lischkei* (E. A. Smith, 1888), *L(?). opalina* (Smith, 1882) and *Tylotiella(?) longispira* (E. A. Smith, 1879). **188–189**, *L. apollinea*: syntype of *Mangilia apollinea*, BMNH 1905.7.14.59–61, 5,0 × 2,2 mm. **190–191**, *L.(?) lischkei*, lectotype of *Pleurotoma (Mangilia) lischkei*, BMNH 1874.5.26.38, 5,6 × 2,6 mm. **192**, *L. opalina*: holotype of *Pleurotoma (Mangilia) opalina*, BMNH colln, 8,0 × 3,2 mm. **193**, *Tylotiella(?) longispira*: holotype of *Drillia longispira*, BMNH 1878.11.7.6, E. of Goto Islands, Japan, 46 fathoms, Cuming colln., 16,3 × 4,6 mm.

nodules and developing into short peripheral plicae; breadth 0,83–0,90 mm, height 0,68–0,88 mm (b/h 0,83–1,25). Teleoconch with 9–10 axial ribs, rostrum with 7–10 close spiral threads, some syntypes with additional, scratch-like spiral sculpture faintly traceable as far up as the shoulder lira.

Leiocithara angulata (Reeve, 1846)

Fig. 187

Mangelia angulatā Reeve, 1846a: pl. 8, sp. 62; *idem*, 1846b: 64. Type locality: 'Bay of Manila (found in sandy mud at the depth of four fathoms)', Philippines.
Eucithara angulata; Hedley, 1922: 263 (references).

Type material: Two syntypes in BMNH (not accessioned); the syntype measuring 4,5 × 2,0 mm is designated lectotype.

Descriptive notes: Penultimate whorl with 7 axial ribs, no spiral sculpture except for 5–6 very weak lirae on rostrum. Outer lip with a distinct denticle posteriorly, none anteriorly, other than a slight irregularity visible within lip; inner lip with a small parietal denticle. Protoconch small, conical, limit not clear, but last whorl evidently with a prominently projecting peripheral angle, bearing 16 low but acute lobes.

Leiocithara opalina (E. A. Smith, 1882)

Fig. 192

Pleurotoma (Mangilia) opalina E. A. Smith, 1882: 215. Type locality: unknown.

Type material: Holotype, BMNH colln, *ex* H. Cuming; 8,0 × 3,2 mm.

Notes on holotype: Axial ribs extending from suture to rostrum, slightly arcuate, with a slight procurvature below suture, in t/s somewhat roundedly angular, low, narrower than intervals, 11 on 1st whorl, 13 on penultimate one. Spiral lirae forming slight nodules where they cross axials, lirae relatively widely-spaced, 8 on penultimate whorl, one at periphery and another just below it being the strongest; about 17 widely-spaced lirae on base of body whorl. Interstices with microscopic spiral and collabral striae. Outer lip without teeth (except for a slight swelling posteriorly), columella with a parietal nodule only. Off-white. Protoconch of 3 whorls, last one with axial riblets.

Leiocithara lischkei (E. A. Smith, 1888)

Figs 190–191

Pleurotoma (Mangilia) lischkei E. A. Smith, 1888: 312. Type locality: Japan.

Type material: Two syntypes, BMNH 1874.5.26.38, *ex* R. F. Geale; the larger (5,7 × 2,6 mm) is missing its apex, and the smaller (5,6 × 2,6 mm) is here designated lectotype.

Descriptive notes: Protoconch conical, of about 3,6 convex whorls, 1st one tilted, axial riblets beginning on 3rd whorl, about 35 arcuate, strongly opisthocline riblets on last whorl; breadth 1,05 mm, height 1,15 mm.

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